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Chief Regional Managers

ONE satisfactory feature of the interim organisation for the railways which came into force yesterday is the increased autonomy and status accorded to the former Chief Regional Officers, who now are known as Chief Regional Managers, a designation more in keeping with their increased responsibilities. Their duties and relationship with the British Transport Commission and its Chiefs of Services and Chief Officers responsible for railway matters are described on another page. In view of the many railway responsibilities retained at the centre the scope which the Chief Regional Managers will have will depend largely upon the attitude, involving some self-restraint, of the members of the Commission and of the Commission's specialist officers. The Commission, however, has affirmed that Chief Regional Managers have responsibilities for all departments in the Regions, and that the Regional departmental officers are responsible to them. This, as far as it can be interpreted in the light of the many checks on

executive responsibility, including the right of the Commission's specialist and technical officers to inspect and visit in the Regions, is a welcome breakaway from the functional system. Having increased their powers and status the Commission has done nothing to enhance the material rewards for increased responsibility. The Chief Regional Managers receive the same salaries as when they were Chief Regional Officers. Their present duties are comparable with the general managers of main-line railways before the last war. Their salaries are in no way comparable, being perhaps rather more in amount than half that of a prewar general manager—which in purchasing power, in view of the fall in the value of money since 1939, gives a value something like one-quarter of prewar. The Commission has shown its good intentions and awareness of realities in according Chief Regional Managers greater responsibility and abandoning, at least to some extent, the functional system. It is a pity that it has not done the same in the case of their salaries, which are absurdly low in relation to the very heavy responsibilities imposed, and infinitely lower than those of men bearing a comparable burden in other walks of life. There is a strong case here for recognition of exacting duties—the total amount at issue is not large in relation to the important issues involved—and for breadth of vision. There is no position in industry calling for so great a diversity of qualities and experience as management of a major railway, and it is false economy to withhold due reward from those bearing the responsibility for the efficiency of the railways on which the whole of industry and the whole community depend.

Loan for Sierra Leone Development

THE proceeds of the £1,680,000 loan for the Sierra Leone Government announced last week are to be applied to financing development works in the colony and protectorate, including the improvement of communications. The loan follows that for £2,030,000 raised in 1950, of which £95,000 was allocated for railway rehabilitation. The 2-ft. 6-in. gauge Sierra Leone Railway follows a devious course and has heavy gradients which make its operating costs high, with the result that there is regularly a deficit. After a survey made in 1949 by Mr. A. J. F. Bunning, then Adviser on Inland Transport to the Secretary of State for the Colonies, it was decided to spend £1,250,000 on improvements, including realignment between Freetown and Bauya (64 miles) to reduce the gradient to 1 in 100, and re-laying with heavier rail and bridge strengthening on this section; certain realignments on other sections; and re-laying of the remaining 163 miles of the main line (from Bauya to Pendembu). It is likely that this programme will be financed by part of the loan. The completion of the work will not only reduce operating costs substantially but allow heavier goods and faster passenger trains to be worked.

Rolling Stock for South-East Asia

ROLLING stock and equipment are listed among the items which Australia may supply to Cambodia and Viet-Nam, according to a statement issued in connection with the visit to Australia earlier this year of the French Minister in charge of relations with those States, which have extensive metre-gauge systems. Australia already is supplying railway material to Asia, including diesel locomotives to Pakistan at an estimated cost of £A200,000 in 1953-54 and £A587,000 in 1954-55; among these are nine under construction by the Clyde Engineering Company, New South Wales. In October, 1950, the International Bank lent over \$25,000,000 to Thailand, of which \$3,000,000 was for railway rehabilitation. As will be recalled from an article in our May 8 issue, the State Railways of Thailand suffered severe damage during the war, particularly to the Makkasan workshops and the fleet of diesel locomotives. Many of their requirements since the war have been met by Japan, although before 1939 motive power and rolling stock came largely from Britain, France, Germany, Switzerland, and Denmark.

Overseas Railway Traffics

MIDLAND Railway of Western Australia receipts for July were £A.50,563, against £A.50,950 for July of the preceding year, but no information as to working costs is available; and the fact that receipts held their own may not be satisfactory in the light of increased costs. Costa Rica Railway traffics for July, the first month of the 1953-54 financial year, were colones 1,651,473, an increase of colones 188,324 over July, 1952; the exchange rate used was colones 15.87 to the £. Taltal Railway receipts for August amounted to pesos 3,121,000, and the aggregate for the two months from July 1 to pesos 6,341,000, against corresponding amounts last year of pesos 2,927,000 and 5,187,000; here again no information is available as to working costs. For the International Railways of Central America railway operating revenue for July was \$1,133,650 and the aggregate for the seven months from January 1 \$9,310,364; the corresponding figures for 1952 were \$1,032,978 and \$8,007,616. Net income for July last was \$22,396, a decrease of \$14,640, whilst for the seven months January to July the aggregate was \$826,569.

A Career in Railway Civil Engineering

NO organisation in the country can offer the aspiring civil engineer better practical training than the railways, on the work of whose civil engineers depends to a large extent the safe and speedy carriage of traffic which in density is among the greatest in the world. The wide scope of the railway civil engineer's duties is well conveyed in word and picture in a booklet entitled "Railway Civil Engineering as a Career," which the Railway Executive and the London Transport Executive have produced in association for distribution to universities, engineering and technical colleges, and public and secondary schools. The organisation of civil engineering on British Railways, and the way in which the aspirant can enter the service and gain the necessary experience to fit him for its senior posts are two of the subjects which it succinctly explains, and the many illustrations give the young man who is considering a career in this important branch of the profession a good idea of both the routine work and the special problems which he may expect to deal with on the railway.

East Indian Railway Annual Dinner

THE geographical situation of the former East Indian Railway, linking Calcutta, the Bengal coalfield, and Upper and Western India through the Gangetic plain, alone might have given it reason for claiming to be the premier line of India. Other ways in which it excelled were made clear at the fiftieth annual dinner last week of the E.I.R. Officers' Association, of which an account is given on another page. The extraordinary success of the reorganisation on the divisional system in 1925, which immediately preceded amalgamation with the Oudh & Rohilkhand, and the smooth working thereafter were emphasised by Sir Hugh Hannay, who as a General Manager of the East Indian after the amalgamation and a Member of the Railway Board, had ample opportunity of comparing the E.I.R. with other Indian systems. The railway's effort in the second world war was referred to by Sir Edward Bentall, a former Member for War Transport of the Viceroy's Executive Council, who recalled the emergencies with which the East Indian more perhaps than any other railway in India had to deal. Now, in the Indian railways' centenary year and almost in that of the E.I.R., it is encouraging that the Eastern and Northern Railways, of which it is a major component, are continuing in the good traditions.

Electrification to Southend via Shenfield

EARLY in 1957 electric trains should be running between London and Southend by the former Great Eastern route. Work is soon to begin on extending the present electrification from Shenfield to Chelmsford, on the main line, and to Southend Victoria, a project which,

unlike the electrification of the Tilbury line now in an advanced stage of planning, will not involve heavy engineering works. The Shenfield-Southend line should therefore be ready to handle any additional traffic thrown on to it by the time the works are put in hand on the route via Barking, where much remodelling will have to be carried out. New four-car sets for the Southend service will include both open-type and compartment-type stock in an endeavour to cater best for both the regular daily passenger and holidaymakers. The cost of £2,500,000 which is stated in the announcement given on another page does not seem at all excessive, particularly when viewed in the light of the many advantages of the scheme. Not only will both the important industrial town of Chelmsford and the ever-growing county borough of Southend greatly benefit, but relief will be brought by the Chelmsford electrification to the Colchester main line, while that to Scotland will help to ease the congestion of the busy Fenchurch Street route.

Trans-Australian Completely Dieselised

COMPLETE dieselisation of the Trans-Australian Railway, the only main-line railway in the British Commonwealth to be entirely diesel operated, has enabled passenger and goods schedules to be cut drastically. The 1,108 miles between Port Pirie, in South Australia, across the Nullarbor Plain to Kalgoorlie, in Western Australia, now are covered in 25½ hr. by the transcontinental passenger trains, against 43 hr. with steam haulage. With air and sea competition for traffic between Western Australia and the four States in the east, the reduced timings are important, more particularly in view of the breaks of gauge. First class freight and perishables are moved in 40-ton covered vans worked in the expresses, which, as Mr. P. J. Hannaberry, Commonwealth Railways Commissioner, suggests, gives a transcontinental service probably not surpassed in the world. Though water shortage has been a major reason for dieselisation, the economies effected in closing of locomotive depots and other ways are considerable; for example, in a typical four-week period the operating cost was 94.25d. per 1,000 gross ton-miles with diesel-electric on the Trans-Australian, against 533.27d. with steam haulage more heavily graded Central Australia Railway. The eleven Clyde-General Motors diesel-electric locomotives placed in traffic between September, 1951, and July, 1952, had run 1,442,500 miles by the end of last June, and with a trouble-free record. Comitantly with dieselisation, the services have been improved by delivery of two air-conditioned passenger sets and a quantity of high-capacity goods stock.

Continuously Welded Track

ON a number of American railways, continuously welded track has been in use for a sufficient length of time to enable reliable cost comparisons to be made between its maintenance and that of ordinary jointed track, and these substantially favour the welded track. Some time ago the American Railway Engineering Association appointed a sub-committee to examine these questions, and its findings, based on the experience of ten railways, have been made public recently. They show that the average additional cost of installing welded 131 lb. per yd. flat-bottom track is \$3,872 per mile, but that the average annual saving in maintenance is \$513 per mile, so that the extra cost of laying is recouped in seven years. Over an average life of 26 years for welded track, the annual maintenance saving works out at \$375 per mile, to which may be added \$145 per mile due to the longer life of the welded rail, and \$175 per mile due to the longer intervals between periodical resurfacing. These savings total \$695 per mile per annum, but are reduced by \$24 to \$671 by the greater cost of relaying the welded rail in subsidiary tracks after its main line service is finished. The net annual average saving per mile for 115 and 112 lb. rail works out at \$630 per mile. Hitherto 85 per cent of the continuously welded rail has been laid in straight track, but there is no reason to doubt that similar savings will be possible on curved track.

Numbering of Power Frame Levers

AN article by the Italian signal engineer, Signor C. Bellomi, in a recent issue of *La Tecnica Professionale*, discusses the question of the various ways in which the arranging and numbering of levers in locking frames can be effected. All his examples refer, it is true, to the type of power frame in which mechanical locking has been retained, of which large numbers exist in Italy, but the problem is nevertheless a mechanical one, even when the locking has to be supplemented by certain electrical controls in consequence of the numbers of levers being reduced by applying electrical signal selection. This in fact often makes the mechanical design of the ordinary locking call for greater care and attention. Selection has often been resorted to in order to reduce the length of the frames, which in any case in Italy always have the levers arranged in a double row when there are 50 or more, this in itself effecting great economy in space. Signor Bellomi's arguments do not differ in essentials from those with which signal engineers everywhere are familiar, but his diagrams are of interest as giving the Italian method of representing the Stevens tappet locking, which differs appreciably from the conventions used in British practice. He has set forth his case with the clarity and precision characteristic of Italian engineers.

The New Railway Organisation

AGOOD many further details are now available of the interim organisation for railways which is to operate as from October 1 until the new scheme of re-organisation required by the Transport Act of 1953 is submitted to and approved by Parliament. A brief outline of the arrangements was given in our last week's issue. Additional details are given elsewhere this week. One may be forgiven for thinking that in many respects, for the vast majority of railwaymen, indeed, this is the case of the more things change, the more they are the same. The Act specifically called for the abolition of Railway Executive and for the decentralisation of railways. It is true that the Railway Executive no longer exists in name, that its Chairman has been translated to another sphere and that two of its full-time functional Members have retired. It is clear also that a good deal more status and responsibility are being accorded the former Chief Regional Officers, who are now known as Chief Regional Managers and have functions which are more closely associated with the general understanding of the term "management." The direct functional system by-passing the Chief Regional Officers has gone, and the Chief Regional Managers will be responsible for management over all departments in the Region and the departmental officers will be responsible to them.

So far, so good. Much will depend on the way in which the new organisation is administered, but there are some obvious dangers which should be guarded against from the outset. The British Transport Commission itself is a highly centralised body and there is no intermediate platform between it and the Chief Regional Managers. Since the British Transport Commission is not to function in a manner similar to that of a board of directors, responsible solely for broad policy and so forth, it is inevitable that it should have at least a small specialised staff. In fact, it has taken over the specialised staff of the Railway Executive and in doing so has immediately raised the possibility of not only topheaviness in administration, but of over-centralisation in control.

Moreover, as several of the Members of the British Transport Commission are themselves specialised, it is clear that in the light of the over-riding powers and authority of the Commission stemming particularly from its absolute control on higher financial matters there is a grave possibility that a considerable element of functionalism will arise, unless the greatest care is taken by the Members of the Commission to guard against this contingency. There can be no doubt that the effect of the new scheme is to place greater powers of management in

the hands of the Commission than it has enjoyed hitherto. Whether this will react to the detriment of the essential need for such a body to be concerned primarily with policy making can be judged only after experience of the manner in which it interprets its powers and responsibilities.

It is inevitable that some aspects of railway administration—such as rates and charges policy, wages, and so forth—should be centralised; but whether this should be done at the very top of the organisation is another matter. Much will depend on whether the Commission is sufficiently seized of the necessity for pursuing a policy of decentralisation and delegation. The Commission is emphasising strongly that the present is an interim arrangement which will not prejudice the scheme of re-organisation, due in a year or more, under the terms of the Act. The working of the present organisation should afford a good deal of guidance as to the lines which should be followed in the permanent scheme. The merits and weaknesses of the present arrangement no doubt will come to light within a matter of months. Meantime the efficiency and success of the interim scheme will depend, as we have said, in very large measure on the manner in which it is implemented.

British Contribution to 50-Cycle Technique

PUBLIC services between Lancaster, Morecambe, and Heysham, L.M.R., with single-phase electric traction at the industrial frequency of 50 cycles per second, began on August 17, but this new stage in the development of British railway electrification was not formally inaugurated until last Tuesday. The proceedings are reported on another page. Guests of British Railways, the English Electric Co. Ltd., and British Insulated Callender's Cables Limited, the three undertakings which have collaborated in the project, were then able to see the general trend of approach in this country at present to the many questions affecting motive power and fixed equipment which need to be investigated thoroughly if all the potentialities of 50-cycle traction are to be realised.

When the report on electrification of railways was published by the British Transport Commission in 1951, the recommendation to equip a line experimentally for operation at 50 cycles was made with the purpose of testing the suitability of the system for use in Great Britain. Since then various statements have been made to limit uninformed optimism here over the prospect of large mileages being electrified cheaply and rapidly by this method. In some countries, however, limitations such as restricted clearance for high-voltage lines in tunnels, and complexity of junctions concentrated in small areas, are not present to the same extent, and every new 50-cycle scheme is studied with the possibility of widespread adoption in mind. So far, then, the approach of the British electrical industry to this question of worldwide interest is seen to be by way of rectifiers in the rolling stock and d.c. traction motors. This is not surprising considering British prestige in d.c. traction engineering, although there may have been some disappointment among last Tuesday's visitors to Lancaster that there was not a greater variety of manufacturers' solutions to 50-cycle problems available for inspection.

The rectifier system appears at present to be the one favoured in the United States when the possibility of using an industrial frequency single-phase supply for traction is considered. This is in spite of the a.c. main-line achievements in that country, and the building of locomotives with a.c. commutator motors ranging from the high-speed "GG1" class to the latest Pennsylvania freight design, in which every advance made possible by recent technique has been applied to overcoming the drawbacks of the a.c. series machine when starting heavy loads and hauling them at low speeds. It is not certain, however, that countries closer geographically or in sympathy to the a.c. traditions of parts of Europe will not show more interest in the 50-cycle a.c. motor, and it cannot but be noted that some Continental countries whose own railways are d.c. are already active in developing machines of the single-

phase, 50-cycle type. On the basis of the small proportion of locomotives with 50-cycle motors ordered for the S.N.C.F. Valenciennes-Thionville electrification, it is sometimes argued that interest in this type of motor is waning in France, whence the post-war stimulus to 50-cycle development proceeded. Study of various authoritative statements on this project shows, however, that the choice of locomotive types has been governed by the characteristics of the traffic, in which passenger trains capable of rapid acceleration are relatively few. The variety of locomotives does emphasise, however, that 50-cycle design has some way to go before it evolves a single form of motive power with the adaptability that traffic departments are accustomed to require.

In the Lancaster-Heysham stock equipped by the English Electric Co. Ltd. the proportion of space in the body occupied by electrical apparatus is larger than with a d.c. equipment similarly housed inside a motor coach. Ideally, perhaps, a motor coach equipment should be underframe-mounted, but it is unlikely at present that 50-cycle stock will be required to operate rush-hour services where space is in such demand that no encroachment on passenger accommodation can be allowed. The rapid growth of interest in 50-cycle systems has made it undesirable to wait for an underframe equipment to be developed, with cooling and smoothing problems overcome, before showing what British railway and electrical engineers can contribute in this field.

July-August Operating Results

NO. 8 of *Transport Statistics* covered the four weeks from July 13 to August 9, when the holiday season was at its height and industrial productivity at a low ebb. The freight train traffic of 17,195,000 tons was the smallest quantity put on rail in any four-week period since nationalisation. It was 798,000 tons (4.4 per cent) short of the 1952 level and nearly 200,000 less than the poor 1948 tonnage. Merchandise and livestock forwardings of 3,190,000 tons were 94,000 tons (2.8 per cent) down on last year, but 75,000 more tons of minerals were despatched, bringing the total tonnage to 4,301,000. Coal and coke loadings fell to a record low level of 9,704,000 tons, no less than 779,000 tons below 1952 (7.4 per cent). It is doubtful whether the loss in coal carrying will be made good by the end of the year; the National Coal Board recently reported that output for the 36 weeks to September 12 was down by nearly 2,500,000 tons.

The decline in traffic led to 20,000 fewer wagons being loaded with merchandise and 81,000 fewer with coal and coke; the number used for minerals was almost the same as a year ago, the average wagon load at starting point being raised by a quarter of a ton to the record weight of 11.91 tons. At August 9, the number of wagons under repair was 91,258, or 8.1 per cent of the total stock. About 16,000 fewer wagons were available for traffic than at the end of January. On the other hand, the number of locomotives under repair was reduced from 3,353 in January to 2,957 in August, or from 17.9 per cent of net stock to 15.8 per cent, making nearly 400 additional locomotives available for work. The July-August period is a favourable time for keeping down locomotive coal consumption. This year 57.59 pounds were used per engine mile, a saving of half-a-pound a mile on last year. The figure is the lowest recorded by British Railways for any period, but the former railway companies consumed only 53 pounds per mile throughout the busy year 1937 and 52.5 pounds per mile in 1938, when freight traffic was light.

FREIGHT OPERATING STATISTICS

Though the length of haul for all traffic was 76 miles against 73 a year ago, net ton-miles decreased by 8,608,000, or 0.6 per cent. The total ton-mileage of 1,399,000,000 was less than in the corresponding period of any year since 1949, but the Western and Eastern Regions moved a heavier traffic volume while the other Regions had an easier time. There is a curious likeness between the changes in traffic volume in the Western and Eastern Regions as the first three

entries in the table below show; the other entries give the operating results.

JULY-AUGUST 1953 STATISTICS COMPARED WITH 1952

Region	Statistic	Western		Eastern		
		Increase or Decrease	Per cent.	Increase or Decrease	Per cent.	
Tons (000)	2,859	-103	-3.5	2,755	-99	-3.5
Ton-miles (000)	262,238	+6,510	+2.5	293,677	+7,752	+2.7
Wagon miles (000)	52,063	+920	+1.8	60,074	+1,312	+2.2
Freight train, miles (000)	1,739	+22	+1.3	1,860	+23	+1.3
" " hours (000)	189	+3	+2.0	199	-	-0.2
Total engine hours (000)	500	+3	+0.7	439	-2	-0.3
Train load (tons)	150	+2	-	157	+2	-
Ton-miles per train hour	1,075	-2	-	1,223	+21	-
Wagon miles per train hour	213	-2	-	250	+3	-
Freight train speed (m.p.h.)	9.20	-0.07	-	9.33	+0.13	-

Over the whole system, British Railways ran 9,526,000 freight train miles, a decrease of 13,000 (0.1 per cent), and worked 1,030,000 freight train engine hours, a decrease of 13,000 (1.2 per cent). The train load of 147 tons was about half a ton less and freight train speed improved slightly to 9.24 m.p.h. The North Eastern Region equalled the record speed of 11.38 m.p.h. achieved in June, 1952, and the Scottish Region came close with an average of 11.12 m.p.h. The all-line averages for ton-miles and wagon miles worked in a train hour were almost identical with last year's results.

RAILWAY PASSENGER TRAFFIC

No. 8 of *Transport Statistics* furnishes somewhat late details of passenger journeys in the month of June. The total of 81,605,000 journeys was 2,312,000 above 1952, an increase of 2.9 per cent. If the Southern Region had not carried 2,592,000 more people (8.9 per cent), the Coronation month would have shown a decrease in rail travel. During the first 6 months of the year the Southern lost 1,540,000 journeys, representing 0.8 per cent of its large carryings; in comparison a 2.9 per cent decrease in the Western Region meant the loss of 1,450,000 journeys. An astonishing decrease of 5.1 per cent in travel occurred in the London Midland Region where 5,450,000 fewer journeys were started. In comparison the Eastern Region's loss of 955,000 passengers (1.2 per cent) was not very serious. The North Eastern Region actually originated 240,000 more journeys (1 per cent) and the Scottish Region also had an increase of 218,000 (0.7 per cent).

During the half-year, the volume of first class travel continued to shrink. The number of passengers was 9,697,000, a decrease of 849,000 (8.1 per cent), and the corresponding receipts were £12,100 less (2.1 per cent). All Regions shared in the decline, the highest loss being in Scotland—302,000 journeys (19.8 per cent).

In the four weeks to August 9, London Transport railways carried 42,706,000 passengers, an increase of 1,286,000 (3.1 per cent). The average receipt per journey was 7.23d. against 7.7d. last year, so that the total railway revenue for the period was 5 per cent less.

ROAD TRANSPORT

In the Period 8, British Road Services carried 2,594,000 tons, a decrease of 132,000 tons (4.8 per cent). They worked 45,341,000 vehicle miles, 1,204,000 fewer than a year ago (2.5 per cent).

Road Passenger Transport recorded 198,042,000 passengers, 1,049,000 fewer than last year (0.5 per cent). The Tilling Group carried 533,000 more people (0.4 per cent) and ran 212,000 more car miles; the Scottish Group had 1,582,000 fewer passengers (2.6 per cent) and cut car miles by 163,000 (1 per cent).

London Transport road vehicles carried 284,093,000 passengers, an increase of 1,330,000 (0.4 per cent), but a drop in the average fare from 3.38 to 3.32 reduced road revenue by £56,000 (1.4 per cent). Altogether London Transport moved by rail and road 326,799,000 people, 2,616,000 more

than a year ago, without earning additional gross revenue. It was, however, able to reduce rail car miles by 344,000 (2·1 per cent) and road car miles by 154,000 (0·4 per cent).

Trans-Zambesia Railway

THE report for the year ended December 31, 1952, of the Trans-Zambesia Railway Co. Ltd., of which Mr. Vivian L. Oury is Chairman, shows that after taking into account the interest on investments and adjustments to taxation provisions and providing for taxation on current profits, tax equalisation reserve, arbitration expenses and reserve for increased cost of replacement of fixed assets, the surplus available for the service of the loan capital amounted to £70,270, compared with £70,542 for the previous year. After meeting the service of the 3½ per cent first debenture stock, £18,750 was available for interest on the £1,500,000 5 per cent income debenture stock. Provision for renewals was £41,014, compared with £39,434 for the previous year and a further £23,633 has been set aside for increased cost of replacement of assets.

The following are some of the principal results:—

Goods tonnage	1951	1952
Goods receipts	325,943	398,164
Livestock and vehicle receipts	£ 424,892	£ 482,809
Passenger receipts	6,078	7,086
Baggage and parcel receipts	91,398	98,226
Gross receipts	10,562	14,044
Working expenses	538,750	608,433
	380,511	451,523

Although operating receipts increased, working costs also rose to a greater extent; the report states that the company must increase its rates for the first time since the war.

Heavy rains in the first quarter of the year and the flooding of the Zambezi affected the movement of certain traffics; nevertheless, there are good prospects of increased production in the future. The delivery of two "G" class locomotives was made and in addition, two first class passenger coaches were delivered and are now in service. Sixty high-sided open wagons were shipped recently. Further new houses for staff are under consideration and the new hospital at Inhaminga is nearing completion. Constant improvements to the track have been made and additional running loops have been put in.

The tonnage handled at the port of Beira, 2,409,914 metric tons, was again a record, representing a 12½ per cent increase over the previous year. The new mineral and oil wharf extensions have been completed. In Beira township many new buildings have been inaugurated and the construction of others is well advanced; good progress has been made on the water supply installations.

A six-year plan of development for the Province of Mozambique has been approved by the Metropolitan Government of Portugal involving expenditure of some £29,000,000; the works include hydro-electric and irrigation schemes, railway construction, and aerodromes.

Winter Train Services of the Western and Southern Regions

A PROMINENT feature of the Western Region winter timetables is the continued improvement of the service between Paddington, Birmingham and Wolverhampton. As yet, two trains only are restored to two-hour schedules, the 9 a.m. down "Inter-City" and the 9 a.m. up from Birmingham; the former, stopping only at High Wycombe, is allowed 87 min. for the 84·1 miles from there to Birmingham, and the latter 25 min. for the 23·3 miles from Birmingham to Leamington, and 93 min. for the 87·3 miles thence to Paddington. The up "Inter-City" leaves Wolverhampton 10 min. later than before, at 4.35 p.m., to fit in with the even-hour departures from Birmingham (5 p.m.), and runs to London in 2 hr. 5 min. with stops at both Leamington and High Wycombe.

Other trains on the service accelerated in the winter timetable are the 9.10 a.m., 2.10 and 5.10 p.m. down, by 10, 11 and 12 min. respectively, and the 8 a.m. (5 min.),

12 noon and 3 p.m. up (10 min.). There are now two 2-hr. trains, one in 2 hr. 5 min., one in 2 hr. 10 min., and five in 2½ hr. As yet nothing has been done to improve the schedules of the 11.10 a.m., 4.10 and 6.10 p.m. down; the last-mentioned, before the war on a 2-hr. schedule and the most popular down train on the service, still takes 2 hr. 39 min. to reach Birmingham.

On the Paddington-Bristol service, the 1.15 p.m. down follows the 11.15 a.m. down "Merchant Venturer" in being given a booking of 106 min. over the 106·9 miles to Bath, and reaches Bristol at 3.22 instead of 3.37 p.m. The first postwar two-hour schedule between Bristol and London has been effected by accelerating the non-stop 11.45 a.m. up to reach Paddington at 1.45 p.m., 10 min. earlier; the "Bristolian," however, still requires 2 hr. 20 min. in each direction as compared with 1 hr. 45 min. before the war, then non-stop, and now with two stops going down and one coming up. The restored 1.50 p.m. from Bristol to Paddington and the new 7.50 p.m. from Paddington to Bristol of the summer timetable are both retained for the winter, and are now provided with a restaurant car in each direction. Another mile-a-minute timing over this route is that of the 8 a.m. up from Cheltenham, accelerated 10 min. to run the 91·0 miles from Kemble to Paddington in 91 min. arriving at 10.35 a.m.

The increasing industrial importance of South Wales is reflected in the decision to retain for the winter the "Pembroke Coast Express," at 10.55 a.m. from Paddington to Newport, Cardiff, Swansea, and principal stations to Pembroke Dock; the return is at 1 p.m. from Pembroke Dock (3.50 p.m. from Swansea and 5 p.m. from Cardiff), reaching Paddington at 8.5 p.m. Both these trains are additions to the pre-war service. In South Wales a notable development is the inauguration of an even-interval train service over the lines of the former Barry and Taff Vale Railways between Barry Island, Barry, Cardiff, Merthyr, and Treherbert. Throughout the day the trains run at half-hourly intervals, those at the even hours from Barry Island to Merthyr and at the half-hours to Treherbert; in the reverse direction the starts from Merthyr are at the hours and from Treherbert at the half-hours. Additional trains are run at the morning, midday and evening rush hours. For the purpose of the new service, the relative Barry and Taff Vale tables have been combined in the timetable book, greatly simplifying the work of tracing connections through Cardiff. A through service is also now in operation between Penarth and Rhymney but not on an even interval basis.

As to through services, the major improvement is that of the morning service from Plymouth to Liverpool and Manchester, which now leaves Plymouth at 8.0 instead of 8.45 a.m., and is considerably accelerated, as it is 65 min. earlier from Bristol (11.25 a.m.) and 61 min. earlier into Crewe (3.49 p.m.), where it connects with the "Midday Scot" from Euston, and so affords a day service from the West of England to Glasgow and Edinburgh. Manchester and Liverpool are reached at 4.53 and 4.50 p.m., 77 and 70 min. earlier than last winter, respectively. The through summer working of the "Devonian," including restaurant car, is being continued during the winter, between Bradford, Leeds, Bristol, Torquay, and Paignton. Among miscellaneous improvements, one is the diversion of the Sunday 8 a.m. (now 8.10 a.m.) from Shrewsbury to Paddington, from the Oxford to the Bicester route, reaching Paddington at 12.40 instead of 2.30 p.m. (2-hr. acceleration).

The Southern Region winter timetable is very similar to that of the previous winter. One addition is a continuation for the winter of the 6 p.m. restaurant car express on Sundays from Waterloo to Basingstoke and principal stations to Exeter. On the Eastern Section, the 3.25 p.m. from Margate to Charing Cross via Deal and Dover, before the war an 80-min. train from Folkestone to Waterloo, now calls additionally at Ashford, but the 6.20 p.m. arrival at Charing Cross remains unaltered; the time from Folkestone is now 90 min. Last year's practice of printing in the S.R. book the additional holiday trains to begin running in June (1954) is not followed this year.

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

Overhead Wires in Tunnels

August 24

SIR.—In your July 31 issue one of your correspondents, Mr. H. Charnley, suggests a very interesting alternative to the installation of high-voltage a.c. overhead contact wires in tunnels, namely the supply of a lower voltage from a third rail.

As early as 1950, at meetings between railway engineers discussing the single-phase, 50-cycle system of traction at 25,000 V., it was accepted that a lower voltage than the normal supply should be used in tunnels in cases where tunnel modifications to accommodate an overhead line carrying high voltage would be too expensive. The financial question has to be examined in every case, and an example of what may be involved was mentioned in your August 14 issue, referring to the tunnel near Valence on the Lyons-Marseilles section of the S.N.C.F. where the lowering of the rails involved demolition of a main conduit. The new profile makes it possible to use an acceptable voltage in the overhead wire, no matter what form of current is used.

In my opinion the problem is of interest in other cases of electrification, and I think general studies should be made of electrical solutions to the problem of negotiating tunnels without being obliged to execute expensive modification work.

Yours faithfully,
P. DE GIACOMONI

Sophienstrasse 23, Karlsruhe

Tilbury Line Electrification

September 21

SIR.—Passengers on the Tilbury Line who for 40 years have awaited news that electrification was about to begin are assured that it is "No. 1 Priority." Recently they were told by the Eastern Region that all preliminary surveying and planning had been done and that work could be started at any time provided Treasury sanction for the capital expenditure was forthcoming. Unfortunately there is no indication that this can be expected in the near future.

When the L.T.S.R. was acquired by the Midland shortly before the first world war the Southend Corporation withdrew its opposition to the Bill giving the necessary powers to the Midland in return for an undertaking that the new owners would electrify the line. The war prevented electrification, and soon afterwards grouping took place. Despite constant pressure the L.M.S.R. contented itself with collaborating with the Underground in extending the District service to Upminster.

After nationalisation and transfer of the Tilbury Line to the Eastern Region, hopes revived and two years ago there were expectations of an early start on electrification. Subsequent economic crises and resultant restrictions on capital expenditure and on use of materials needed by export industries have pushed the project back into its pigeonhole.

An additional source of irritation to travellers using Fenchurch Street is the sight of the electrified tracks between that terminus and Stratford. Before the war the L.N.E.R. decided to include this section in their Shenfield electrification scheme. Although the Eastern Region subsequently withdrew the Stratford-Fenchurch Street steam trains to avoid interference with the working of L.T.S. trains between Gas Factory Junction and Fenchurch Street, they went on with the work of electrifying the tracks and four miles of costly overhead equipment now stand idle except when an occasional ghost train is run to test the equipment.

There are many calls on the limited supplies of capital

and materials, but there are other considerations. Work on the Pennine electrification is nearing completion and the skilled gangs engaged in the erection of the overhead equipment on that section should be transferred to another job of the same kind on the Tilbury Line. The sight of something being done would be very cheering to the thousands tired of travelling in antiquated trains.

Yours faithfully,

G. H. LEPPER

25, Victoria Street, S.W.1

[Electrification between Fenchurch Street and Stratford proved itself very useful last winter, after floods had severed the Tilbury Line. See *The Railway Gazette* of April 3. It would be useful in any emergency which might put out of action the electric lines between Bow Junction and Liverpool Street. The various factors mentioned by our correspondent have long been borne in mind by the railway authorities. The recent decision to extend electrification beyond Shenfield to Southend and Chelmsford is recorded elsewhere in this issue.—ED., R.G.]

Merseyside Passenger Services

September 10

SIR.—The references in your issues of August 28 and September 4 to new rolling stock on the Wirral electric lines prompts the suggestion that the Liverpool Central (L.L.) to Rock Ferry service might be extended to Hooton, where there should be a considerable residential traffic.

In the Liverpool area a great improvement to local services could be effected by extending the Mersey Railway northwards from Liverpool Central to link up with existing suburban lines to provide a cross-city service. Thirty years ago there were schemes, which never materialised, to link the Mersey Railway with the former L.N.E.R. (G.C.R.) Birkenhead line near Bidston, and the Liverpool Overhead Railway with the C.L.C. Southport line near Aintree.

Yours faithfully,

R. G. R. CALVERT

10, Bolton Avenue, Windsor

Riccall Crossing Accident

September 27

SIR.—Reference the Ministry of Transport report on this accident summarised in your issue of September 18, I am surprised that, while the signalling apparatus was found to be in proper order, the Inspecting Officer made no comment on standard signalling equipment which might have prevented this accident had it been incorporated in the signalling installation at Riccall Crossing.

Would not installation of backlocks on the crossing home signals operated by treadles placed on the tracks beyond the crossing in each direction, have effectively prevented the signalman from making the mistake which caused this accident?

When the signalman came to replace his down signals in the face of the express, he would have been unable to fully replace the home signal in the frame because the train had not yet passed over the treadle and released the backlock. Thus he would have been unable to open the gates without first using the emergency key to unlock the block instrument to release the backlock and enable him to fully replace the home signal.

It is virtually certain, however, that as soon as he found himself unable to fully replace the home signal, he would have remembered that the express had not yet passed.

Yours faithfully,

D. A. WHEATLEY

14, Cromer Villas Road, Southfields, S.W.18

THE SCRAP HEAP

If

(With apologies to Rudyard Kipling)
These verses have been found in the
archives of an eminent retired railway
officer. Though the details and some cir-
cumstances of railway management
have changed in the years, the qualities
demanded of a railway manager
remain the same, as shown below.

If Parliamentary Bills and Oppositions
 Are matters you consider with delight,
 If main line trains controlling proposi-
 tions
 Are things you like to dream about at
 night,
 If you can answer countless grousers daily
 And keep your sense of humour unde-
 filed,
 And being tired, treat your troubles
 gaily,
 Perhaps you'll be a railwayman, my
 child.

If you can think in terms of engine miles,
 And understand statistical returns,
 If no "reminders" help to swell your
 files,
 And you can prove what every service
 earns,
 If weekend tickets, cheap returns, and
 seasons,
 And cartage rebates fail to drive you
 mad,
 Then E.O.H.P. there exist good reasons
 Why, soon you'll be a railwayman, my
 lad.

If you can keep awake while all about
 you
 Are fast asleep at Clearing House de-
 bates,
 If you can look sincere while traders
 doubt you,
 And merely, out of friendship, raise
 their rates,
 If Section 58.I.b. enthralls you,
 And "other sources" fill your heart
 with joy,
 If nothing in the Railways Act appals
 you,
 You may become a railwayman, my
 boy.

If you can meet a traders' deputation
 And answer all their grievances with
 tact,
 And, answering, preserve your reputa-
 tion
 For stating nothing which is not the
 fact,
 If C.M.E.s and traffic men can't bluff you
 With tales of foreign coal and train
 miles run,
 If you can please the Board, then sure
 enough you
 Have become a railwayman, my son.

Cool Thefts

What was the aim of the thief who
 once stole a 120-ft.-high chimney in
 East London, removing it brick by
 brick? And to what end did thieves
 remove a lift, with its motor and cable,
 from a block of flats in Cairo? Were

these thefts inspired by purely material
 promptings, or was it the thrill that one
 suspects accompanies audacious crime?
 For instance, the thieves who robbed
 an Irish railway company of thirteen
 miles of branch line and station build-
 ings near Tipperary could hardly have
 intended to set up a rival company.—
From "The Manchester Guardian."

Tramps May Sleep in Trains

As the result of a New York magis-
 trate's refusal to accept pleas of guilty
 from three men, tramps may now spend
 the night in New York underground
 trains. The Long Island City Court
 Magistrate ruled that while it was an
 offence to sleep on underground plat-
 forms, there was nothing in the law
 against sleeping in the trains.

Badge of Pride

This week may see the beginning of
 better things for railway travellers. The
 Regions of British Railways are to be
 given more independence. It is wonder-
 ful what a bit of competition can do.
 Before the war the spirit of rivalry which
 existed between the various railway
 companies was a big factor in maintaining
 the excellence of British trains.

All the men need now is a lead from
 the Regional Managers, an incitement to
 enthusiasm. They will respond as fast
 as their fathers did. How about making
 a start by reverting to the distinctive
 markings of the former companies? Give
 them a badge to be proud of.—*From the "Daily Express."*

Quo Vadis?

Farewell, R.E., it scarcely seems
 That your brief reign is really o'er;
 Vanishing visions, fading dreams
 Alone remain in memory's store.

The stately halls of 222
 Have laid their inmost secrets bare
 And knuckle down to masters new—
 We on the sidelines stand and stare.

Gloom creeps along the corridors,
 The bird of hope is seldom seen,
 Ghosts haunt the venerable floors
 And moan about the "might have
 been."

Do pangs of vivisection wait
 For transport's poor, discarded child,
 Or do the high gods contemplate
 Something magnanimously mild?

Who knows? Strange hands are on the
 plough,
 And change is champing on the bit;
 The cry arises "Whither now?"
 The ancients had a word for it.

Let us, comparing *pro* with *con*,
 Console ourselves; what's in a name?
 The moving finger writes, moves on
 And leaves things much about the
 same.

A. B.
 B 2

Privileged Autograph Hunter



Lindsay Hassett, captain of the Australian cricket team, signing his autograph for Mr. R. Christian, Stationmaster, St. Pancras, before leaving by the Tilbury boat train last week

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

NEW ZEALAND

Net Profit Recorded

A net profit of £83,272 for the year ended March 31 last is recorded in the first annual report of the New Zealand Railways Commission tabled in the House of Representatives. It discloses that revenue for the year totalled £26,607,937 and expenditure £26,524,665. Interest charges amounting to £3,123,436 are not taken into account in the computation of net profit. Last year the railways had a working loss of £1,202,488.

Revenue for the financial year increased by 10.9 per cent and expenditure by 5.27 per cent, revenue failing to meet the estimate by £276,063 and expenditure being £357,335 lower than expected. A loss of revenue amounting to £153,000 was estimated to have resulted from the necessity to divert rail goods to road and sea transport because of the shortage of locomotive crews. Expenditure on wages, coal and oil fuel showed substantial increases. The report states that the inauguration of diesel-electric engine main line traction during the year was a notable event; because of their greater availability, the diesel-electric engines enabled a better service to be given in spite of the continuing shortage of locomotive staff.

Rimutaka Tunnel

Fewer than 10,000 ft. of the 27,600 ft. Rimutaka Tunnel have still to be driven. The contractors, the American firm of Morrison, Knudsen Limited, in association with Downer & Co. Ltd., of New Zealand, hope to complete the

work by July, 1954, a year ahead of the contract date. The Mangaia end, on the Wellington side, has been driven at the rate of about 200 ft. a week and the Wairarapa end at 235 ft. a week.

BRAZIL

Approval of Improvement Projects

President Vargas has approved the Brazil-United States Commission's project for improvements to the Estrada de Ferro Goias. Provision is made for deviations to shorten distances or eliminate sharp curves, partial replacement of rails and sleepers, re-ballasting, purchase of 438 all-steel wagons, eleven coaches, 33 refrigerator vans, 25 steam locomotives, and workshop and warehouse equipment.

The project calls for a loan in foreign currencies, equivalent to U.S. \$1,159,000, and a local expenditure of 249,880,000 cruzeiros (£4,997,600). Because of the low carrying capacity of the line, Goias cereal crops frequently deteriorate at stations while awaiting transport to consuming centres in Rio de Janeiro and Sao Paulo.

The President has also approved the commission's project relating to the Rêde Ferroviaria do Nordeste (the former Great Western of Brazil). The programme calls for a loan of U.S. \$8,777,000, to finance imports of equipment, and an expenditure in cruzeiros of 407,503,000 (£8,150,060). The work planned includes laying of 313 km. of 37 kg. per metre rails from Recife to Barauna, Cascavel and Catende, the busiest sections; recon-

struction of 55 km. of line and a deviation. These works are expected to permit an 80 per cent increase in train weights. The following material is to be purchased: 21 motor coaches and 30 trailers for permanent way maintenance; 502 wagons, 46 coaches, and four luggage vans, all of steel, with vacuum brakes and automatic couplings; 22 diesel-electric locomotives; repair shop equipment and tools.

The same project provides for improvements to the Sampaio Correa Railway, formerly known as Estrada de Ferro do Rio Grande do Norte. It entails a loan of U.S. \$1,350,000 for imports, and a local expenditure of 14,000,000 cruzeiros (£280,000) for track improvement. Six diesel-electric locomotives are to be acquired.

UNITED STATES

Lighter Passenger Stock

While much has been done in the United States during the past two decades in reducing the weight of passenger coaches from the inordinately heavy tonnages of the past—when all-steel vehicles might weigh as much as 80 or even 90 tons apiece—the weight reduction made possible by the introduction of stainless steel or light alloy steel construction, and in other ways, has been somewhat neutralised by the weight increases caused by air conditioning and many other amenities of modern travel. These latter also have put the costs of coach construction up to such an extent that today a new passenger coach costs approximately \$2,000 a seat, compared with \$350 a seat in 1926.

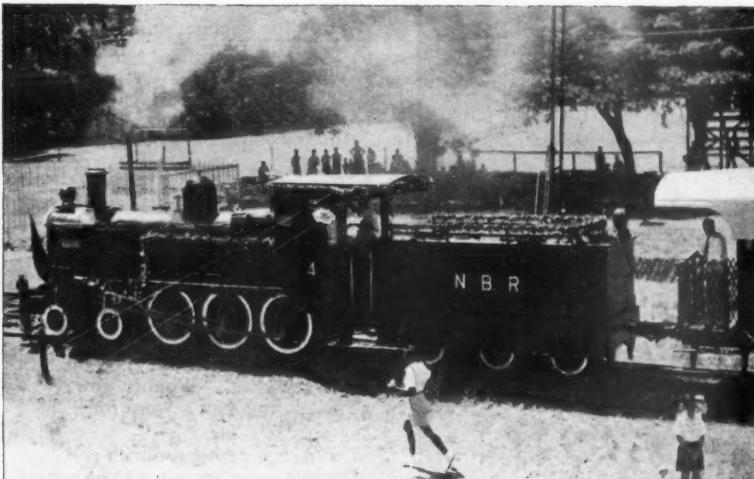
The Chesapeake & Ohio Railway has made some preliminary experiments with a train of the Talgo type, already familiar in Spain, but without as yet coming to any final decision. It is announced, however, that this company, in conjunction with the New York Central System, is to make a determined attempt to evolve a type of passenger coach which will meet both with public acceptance and all necessary standards of safety, and at the same time will be much less costly to build and less heavy to operate. This is being done in an endeavour to reduce the present heavy deficits of both railways on their passenger train operation.

SWITZERLAND

Lightweight Coach in French Express

To test the high-speed running performance of one of its latest lightweight steel express coaches, the Federal Railways arranged with the S.N.C.F. to run it in the "Mistral" between Paris and Lyons. The coach concerned is a first class lightweight coach with torsion-

Locomotive Working in North Borneo



Train approaching Jesselton, North Borneo Railways. The locomotive was built by Kerr, Stuart in 1910 and is decorated for the Coronation of Queen Elizabeth. An article on this railway appeared in our issue of November 14, 1952.

sprung bodies. On trial it normally runs just behind the electric locomotive and has thus to transmit the whole weight (some 500 tons) of the remainder of the train. Noise is reduced by the use of spray-asbestos insulation inside the body, and the general performance and appearance of the vehicle, after several months of trial running, are reported to be highly creditable.

FRANCE

Mechanised Handling of Stores

Palletisation of stores traffic at two general stores on the S.N.C.F. was the subject of an article in the June 20, 1952, issue. In an effort to reduce handling costs, the South-Eastern Region of the S.N.C.F. has adopted mechanised methods at a number of locomotive sheds and workshops.

At the Dijon-Perrigny and Cour-

bessac workshops timber stocks are now stacked in 1 tonne and 1½ tonne lots, and handled by fork-lift trucks. An economy of £35,000 a year, which will be increased when timber suppliers are able to co-operate fully, has already been achieved.

Special types of pallets have been designed for the conveyance of stores and materials inside locomotive workshops. These include steel pallets of standard size (2 ft. 7½ in. by 3 ft. 11 in.) fitted with removable sides for the movement of hot fittings, and mushroom-shaped pallets, which can be lifted from any side, for the conveyance of machine tools.

For transport outside the depot, standard-sized (2 ft. 7½ in. by 3 ft. 11 in. or 3 ft. 11 in. by 3 ft. 11 in.) wooden pallets are used. These pallets can be lifted and moved by fork-lift trucks or by a specially designed hand-pallet truck. A special type of wagon for

the transport of pallets has also been designed. The use of pallets has cut handling costs by from 40 to 80 per cent.

At locomotive depots mechanised methods of handling fuel have been installed. These include the use of mechanical grabs, wagon hoists and elevators.

AUSTRIA

Wels-Passau Electrification

The Federal Railways are considering the electrification of the Wels-Passau section, 83 route km. The cost of installing the overhead equipment would be Sch. 30,000,000, and that of building a new substation, probably at Riedau, about Sch. 20,000,000. A total of Sch. 130,000,000 would be spent on the acquisition of 20 electric locomotives.

Publications Received

Goods Vehicle Operation: Principles and Practice for Students and Executives. By C. S. Dunbar, M.Inst.T. London, S.E.1: Iliffe & Sons Ltd., Dorset House, Stamford Street. 8½ in. x 5½ in. 160 pp. 43 illus. Second edition. Price 12s. 6d.—The production of a new and enlarged edition of this practical work is particularly opportune in view of the impending part-denationalisation of the road transport industry. By taking the case of an imaginary undertaking, the author has described in a lively way, and with much informative detail, the planning and development of goods services of different kinds. He covers such matters as office administration, branch and depot working, staff, costs, rates, and types of vehicle. Both present and potential operators, and also students preparing for examinations of the Institute of Transport and the Royal Society of Arts should find his book of value. A new chapter on the operation of goods services in undeveloped countries, based on the author's practical experience, is eminently realistic, and may offer a necessary *caveat* to the unwary pioneer.

T.D.A. Statistical Year Book, 1952. Published by the Timber Development Association, 21, College Hill, London, E.C.4. Paper covers, 34 pp. Price 2s. 6d.—Few countries in the world today are unaffected in their economies by restrictions on the import of their timber into the United Kingdom. This is clearly shown in the second edition of this annual work of reference. With softwood, supplies have been received from 62 countries in the three years listed, 1938, 1951, and 1952. The total value of wood and timber imported in its raw and manufactured state in 1952 was over £183,000,000, sawn timber and logs being third in order of total values (oils being first and wool second) amongst raw materials. From the statistical information in the 25 tables covering import quantities, values, con-

sumption, and the pattern of timber usage, the stock of softwood at the end of 1952 is seen to have been 60 per cent of the year's total import. British Railways last year used 3,512,000 sleepers.

Report on Experimental Investigation into the Behaviour of Angle Purlins, Ties, and Struts. Prepared by R. J. Ashby, H. M. Nelson, S. Mackey and N. W. Williamson, and published by the British Constructional Steelwork Association, Artillery House, Westminster, S.W.1.—There are three investigation reports on (1) "Mild Steel Angles as Purlins under Corrugated Roofing," by Mr. Ashby; (2) "Angles in Tension," by Mr. Nelson; and (3) "Two Mild Steel Lattice Girders" by Messrs. Mackey and Williamson. Investigation (1) was made as a check on the empirical recommendations of B.S. 449, by testing the behaviour of angles used as purlins under corrugated sheet roofing. It proved that the sheeting effectively distributed the uniform load over the purlins thus showing that B.S. 449 is more rational in its recommendations than is neglect of the stiffening effect of the sheeting. It also proved that the longest lengths of purlin should be used for eaves and ridges and that short lengths should be well distributed between them. Investigation (2) was made mainly to fix a definition of "failure" of angles in tension, on which design is based. As a result, three criteria of "failure" are suggested, each of which may be used. The testing of 18 angle pieces, the elongation and lateral deflexion and the resulting strains are fully described. In Investigation (3) two lattice girders each consisting of continuous double back-to-back angles as chords and single angles as web members were tested. One had three panels and was 4 ft. deep, and the other six panels and was 6 ft. deep; in fact, it was larger in every respect. Loading in each case was at two intermediate panel points. Electric strain gauges were used and were fixed at 156 points on the smaller and at 180 points

on the larger girder; there were two loading runs for each load increment up to the elastic limit. Permissible stress values in B.S. 449 appear from these test results also to be conservative.

Rubber Developments. Published by the British Rubber Development Board, Market Buildings, Mark Lane, London, E.C.3. 6 in. x 8½ in. 30 pp. Illustrated. Stiff paper covers. The autumn, 1953, number describes many applications of rubber in industry. There are chapters on fluid rubber compositions and on the many uses of rubber in manufactured forms. A chapter describes a rubber-tyred locomotive and freight vehicles, and another the use of rubber in conveyor belts used in transport systems.

A.B.C. Railway Guide: Centenary Issue. London, E.C.2: Thomas Skinner & Co. (Publishers) Ltd., 330, Gresham House, Old Broad Street. Price 5s.—The *A.B.C. Railway Guide* was first published in October, 1853, and the current issue, No. 1200, covering the period from September 21 to November 1 inclusive, and showing British Railways winter timetables, completes the first century. Brief mention is made of this on inserts. Otherwise the guide conforms to the usual layout and maintains its high standard of accuracy. An indication of the latter is its widespread use in railway inquiry offices.

Winter Sunshine. Published by Thos. Cook & Son Ltd. 8 in. x 8½ in. 88 pp. Illustrated. Paper covers.—This is a comprehensive guide to prospective winter holidaymakers, providing full information on air, sea, and rail fares and timetables and accommodation. Holiday resorts listed are in the British Isles and places overseas as far afield as the West Indies, India, Ceylon, and New Zealand. There are notes on currency regulations and alterations and insurance and many photographs. The principal holiday events during the winter season in all the resorts are also listed.

Interim Reorganisation of British Railways

Chain of responsibility to British Transport Commission: duties of Chief Regional Managers

BRIEF reference was made last week, in an article outlining the re-organisation of nationalised transport under the Transport Act, 1953, to an interim organisation for British Railways. The interim headquarters organisation for the main-line railways described below came into force on October 1 on the abolition under the Act of the Railway Executive. It is designed to operate during the period until the permanent form of organisation of the railways is finally approved by Parliament. The British Transport Commission is enjoined by the Act to submit to the Minister of Transport within twelve months of the passage of the Act on May 6, or such longer period as the Minister may allow, proposals which after reference by the Minister to certain representative bodies and after such modifications as he thinks fit are to be presented by the Government to Parliament as a White Paper.

The railway reorganisation proposals are to provide *inter alia* for the setting up for "areas" to be specified in the proposals, and for an authority for the whole of Scotland, with or without authorities for areas in Scotland.

Committees of B.T.C.

In the interim railway organisation, to assist the B.T.C. in carrying out its duties in providing railway services, and to deal with matters of urgency and current working, the functions of the Commission are discharged partly by delegation to individual full-time Members of the Commission and partly by various small committees of Members; these in the case of matters which require the authority of the B.T.C. or which they cannot settle themselves make final recommendations to the Commission.

Chiefs of Services

A number of officers have been appointed as advisers to the Commission on matters of policy, and to ensure consistency of action in matters of principle and in settlement of Regional and inter-Regional questions.

There are four Chiefs of Services:—

Chief of Commercial Services: Mr. David Blee, formerly Member of the Railway Executive for commercial matters. He is responsible for all railway commercial activities, and the commercial officers at the former Railway Executive are responsible to him.

Chief of Operating Services: Mr. S. E. Parkhouse, formerly Chief Officer (Operating), the Railway Executive. His duties embrace railway and steamship operating and railway motive power, and the operating, marine, and motive power officers at the Railway Executive report to him.

Chief of Establishment & Staff: Mr. W. P. Allen, formerly Member of the

Railway Executive for staff matters. He is responsible for staff, establishment, welfare, training and education, and medical matters, and the officers concerned with these at the Railway Executive report to him.

Chief of General Services: General Sir Daril G. Watson, formerly Member of the Railway Executive. The officers at the Railway Executive report to him responsible for stores, paper and printing, estate and rating, police, civil defence, and fire protection.

The above four have superior status.

Chief Officers

Besides the above, and responsible to the Commission, there are four Chief and one Executive Officers:—

Chief Officer (Mechanical Engineering): Mr. R. C. Bond, formerly Chief Officer (Locomotive Construction & Maintenance), the Railway Executive. He is responsible for locomotive, carriage, and wagon construction and maintenance, outdoor machinery, and design. The Railway Executive officers dealing with these matters report to him.

Chief Officer (Electrical Engineering): Mr. S. B. Warder, who has held an appointment with the same designation at the Railway Executive.

Executive Officer (Road Motor Engineering): Mr. A. E. C. Dent, who has held an appointment with the same designation at the Railway Executive.

The three officers named above were under the Railway Executive functionally responsible to the Member of the Executive for mechanical and electrical engineering matters, Mr. R. A. Riddles.

Chief Officer (Civil Engineering): Mr. J. Ratter, formerly Chief Officer, Engineering (Works), the Railway Executive. The officers at the Railway Executive responsible for civil engineering, mining, architecture, and dock engineering are responsible to him.

Chief Officer (Signal & Telecommunications): Mr. J. H. Fraser, formerly Chief Officer, Engineering (Signal & Telecommunications), the Railway Executive. His subordinates are the engineering officers at the Railway Executive concerned with these subjects.

The Chief Officers Engineering (Works, Signal & Telecommunications, and Maintenance) under the Railway Executive were functionally responsible to the Member of the Executive for civil engineering, Mr. J. C. L. Train, now a Member of the Commission.

Heads of B.T.C. Central Services

The heads of the central services of the Commission continue to be in charge of their departments:—

Chief Secretary: Mr. S. B. Taylor, to whom the Secretary of the Railway Executive, Mr. E. G. Marsden, and the

Chief Officer (New Works), Mr. M. R. Bonavia, are responsible.

Chief Public Relations & Publicity Officer: Mr. J. H. Brebner, whose responsibilities include all public relations and publicity. The Public Relations Officer of the Railway Executive, Mr. D. S. M. Barrie, and the Publicity Officer, Mr. G. Wynne Davies, are responsible to him.

Chief Research Officer: Mr. C. C. Inglis, to whom the Director of Research of the Railway Executive, Mr. T. M. Herbert, and his staff are responsible, besides being at the disposal of the Chiefs of Services and Chief Officers and of Chief Regional Managers for any special investigations.

Chief Solicitor & Legal Adviser: Mr. M. H. B. Gilmour.

Finance: The Chief Financial Officer of the Railway Executive, Mr. V. Radford, and his headquarters staff, are responsible to the Comptroller of the Commission.

The former Chief Officer (Administration) at the Railway Executive, Mr. A. J. Pearson, has been redesignated Chief Officer (Special Duties). The Principal Staff Officer of the Commission, Mr. Frank Gilbert, and his staff report to the Chief of Establishment & Staff.

Except for the above changes, the titles of officers of the former Railway Executive are as before, and it is understood that they will remain so pending amalgamation and reorganisation of the staffs of the Commission and of the Railway Executive.

Chief Regional Managers

The Chief Regional Officers have been renamed Chief Regional Managers. They are responsible direct to the Commission, and attend meetings of the Commission and its committees at regular intervals. They are responsible for management of all departments in their Regions, in which the departmental officers are responsible to them; this is subject to general financial and policy control by the Commission and to the observance of standards prescribed by the Commission in the design, construction, and maintenance of locomotives, rolling stock, permanent way, plant, and buildings.

Their duties include co-operation with other sections of the nationalised transport undertaking, such as London Transport and the Hotels & Catering Services. They must also ensure, for the purpose of executing Commission policy from the point of view of British Railways as a whole, proper reference to and contact with the specialist and technical officers of the Commission, the latter being available for advice and having the right of inspection in the Regions as required. In day-to-day matters, there may be contact between

the Commission headquarters and Regional departmental officers, Chief Regional Managers being informed.

Committee Work

The following committees have been appointed: Accounts, including statistics; Civil Engineers; Commercial, including terminals; Estate & Rating Surveyors; Marine; Mechanical, Electrical, and Carriage & Wagon; Operating & Motive Power; Railways Staff Conference; Road Motor Engineers; Signal & Telecommunications; and Stores. The chairman, members, and secretary of each committee are appointed by the Commission. Decisions on minutes are made by the B.T.C. or its committees in consultation with Chief Regional Managers at regular meetings.

The authority of the Commission must be obtained by Chief Regional Managers to changes of organisation, including alterations to boundaries of areas within a Region.

Staff Appointments

In general, Chief Regional Managers may appoint to posts below assistant departmental officer, and make additional appointments below annual they must obtain the sanction of the Commission. The arrangements under the Railway Executive for nomination salaries of £1,000. Above these limits and advertisement of vacancies have been retained in the new organisation.

Works and Equipment

The B.T.C. formulates in conjunction with Chief Regional Managers annual programmes for locomotives, locomotive boilers, coaching stock, wagons, containers, road vehicles, permanent way renewal wholly or partially with new material, renewal of conductor rails,

renewal wholly or in part of bridges, new permanent way surface water drains and renewal of fencing.

Tenders

Invitations for and the opening and acceptance of tenders are the responsibility of Chief Regional Managers, who must, however, submit to the Commission recommendations for accepting tenders or entering into contracts exceeding £5,000 in value.

Stores continue to be purchased centrally under the same arrangements as obtained under the Railway Executive.

Operating

The Commission is responsible for operating policy, including safety and operating safety. It is responsible also for distribution of motive power and rolling stock between Regions and inter-Regional regulation of passenger and freight movements. The maximum scheduled passenger train mileage to be operated in a Region and other policies to be adopted in providing services are laid down by the Commission from time to time. Before the issue of summer or winter passenger or goods timetables, Chief Regional Managers submit their proposals to the Commission for any drastic changes. Serious accidents or mishaps causing serious dislocation of traffic are reported to the Commission.

Commercial

The Commission is responsible for commercial policy in general and for national negotiations in connection with it, also for policy as to rates and fares.

The approval of the Commission must be sought for the closing of any line or section of line for passenger or goods traffic.

Shipping Services

The Commission is responsible for policy in the design of ships, and for renewal programmes, alterations to, and distribution of ships between Regions, though Chief Regional Managers are consulted in these matters. They report accidents and major defects in ships to the Commission, and must seek its approval for any abandonment of a shipping service, institution of a new service, or extension of an existing one.

Public Relations and Publicity

All matters of policy as to public relations and publicity are the responsibility of the Commission, and all matters of practice where more than one Region is concerned. Public relations and publicity matters concerning only one Region are dealt with by the Chief Regional Manager.

Sales of commercial advertising spaces, allocation of commercial advertisements, and film production continue to be a central subject dealt with by the Commission.

B.T.C. Police

The British Transport Commission Police are responsible for police activities in all forms of nationalised transport except the London Transport Executive. The Chief of General Services is responsible for the general control of the B.T.C. police force, for police schools, and other central activities, and the arrangements which obtained before the interim reorganisation continue.

The area Chiefs of Police maintain liaison with the appropriate Regional railway officers and the appropriate officers of the other parts of the Commission's undertaking.

RADCLIFFE-BOLTON PASSENGER SERVICE WITHDRAWN.—The passenger train service between Radcliffe Central and Bolton Trinity Street, London Midland Region, was withdrawn and Ainsworth Road Halt permanently closed on September 21. Bradley Fold Station continues to be served by Bolton-Bury-Rochdale and Radcliffe Central by the Manchester-Bury service.

FARM MOVED BY SPECIAL TRAIN.—After the completion of afternoon milking on September 28, a special train of the Western Region left Witney at 6.15 p.m. on a 170-mile journey through the night of September 28th to Morchard Road Station, Devon, conveying an entire farm, including livestock, implements and household furniture. Besides 21 vehicles carrying tractors, road vehicles, 50 head of cattle, 100 head of poultry, four containers of furniture and other farming equipment, a passenger coach was provided for the farmer's family and staff. The schedule allowed cattle to be unloaded at their destination in time for milking the following morning.

AWARDS FOR MERITORIOUS SERVICE IN EASTERN REGION.—Meritorious service awards were made at Liverpool Street station on September 14 to two Eastern Region staff, Leading Porter (acting Ticket Collector) H. E. Dempsey, of Benfleet, and Head

Shunter (Passenger) G. C. Thortersen, of Cleethorpes. Presenting Mr. Dempsey with a clock and a certificate and Mr. Thortersen with a barometer and a certificate, Mr. C. K. Bird, Chief Regional Officer, expressed his appreciation of the alertness and resource exercised by both men. Mr. E. W. Rostern, Operating Superintendent, Eastern and North Eastern Regions, and Mr. M. B. Thomas, Public Relations and Publicity Officer, Eastern Region, were present. The incidents in respect of which the awards were made concerned the safe removal by Mr. Dempsey of a hospital patient from the electrified track at Hornchurch where he was trespassing, and alertness by Mr. Thortersen at Cleethorpes during shunting operations.

ENGINEERING, MARINE AND WELDING EXHIBITION, 1953.—The nineteenth Engineering, Marine and Welding Exhibition and the Chemical Plant Exhibition held at Olympia, London, which closed on September 17, attracted 50 per cent more visitors than that previously held two years ago. As a very high proportion of visitors were either potential purchasers or persons directly connected with the engineering industry this large increase was encouraging to exhibitors. Reports from exhibitors show that the majority are more than satisfied at the number of serious inquiries received. Heads of business organisations as far

abroad as the U.S.A. and New Zealand made special journeys to London to visit the exhibitions, and prospective purchasers from at least 60 overseas countries are known to have attended.

GLoucester Railway Carriage & Wagon Co. Ltd., FINAL DIVIDEND.—A final ordinary dividend of 7½d. per 10s. unit, less income tax at 9s. in the £, has been announced by the Gloucester Railway Carriage & Wagon Co. Ltd. This makes a total dividend of 1s. per 10s. unit, less income tax, for the year.

FURTHER SCOTTISH REGION STATION CLOSINGS.—British Railways, Scottish Region, announce that on Monday, October 5, Standhill and Greenend public sidings near Belses Station will be closed, but alternative rail facilities for merchandise traffic by freight train will be available at Belses Station. From the same date Fans Loanend siding near Earlston Station will be closed, and merchandise traffic by freight train will be dealt with at Earlston Station; also Coulter Station, situated between Symington and Biggar, will be operated as a public siding, dealing only with full wagon loads, parcels and "smalls" being dealt with at Biggar Station and conveyed to and from the Coulter area by motor vehicle.

Overhead Contact Systems

A comparison of the types in current use and their applications

By J. C. Grant, M.Sc., A.M.I.E.E., A.M.N.Z.I.E.

THE basic features and design of overhead contact systems are not always well understood by traction engineers. Yet a well-designed contact system is almost as important as a well-aligned track for the smooth and safe running of electric rolling stock. No apology is needed, therefore, for detailing in the present article the principles and functions of the various types of overhead contact systems in normal use. Discussion will be confined to the arrangement of the overhead wires themselves. The design of the masts and other supporting structures forms a subject on its own, and is considerably influenced by local conditions and the availability of supplies.

Three Essential Components

Ruling out the light tramway construction in which a single trolley wire only is employed, there are three essential components in a normal railway contact system: (1) the catenary; (2) the contact wire; and (3) the droppers.

(1) The catenary is a copper or steel cable hung between adjacent supports and normally insulated therefrom. It has a sag which is appreciable in comparison with the span between supports.

(2) The contact wire is of copper or cadmium copper running generally parallel with the track. It often has a

special grooved section for the attachment of the dropper clips.

(3) The droppers, usually in the form of light wires, are spaced at approximately equal intervals for the support of the contact wire from the catenary.

The above three components can be combined in a number of ways, of which the more usual are given below (a) to (e):—

(a) Simple-catenary construction is the name given to the system in which the contact wire is suspended directly from the catenary cable by means of the droppers.

(b) In the compound-catenary system an auxiliary catenary cable is supported from the main catenary by means of an additional set of droppers, and that in turn supports the contact wire. It is sometimes held that this system permits higher-speed running than the simple catenary system, but it is often adopted on account of the higher current-carrying capacity of the three conductors in place of two. It is naturally more expensive than the simple-catenary system, but not excessively so.

(c) Y-System: A system intermediate between the simple and compound-catenary employs an auxiliary carrier wire clamped to the main catenary at both sides of each support. This improves the riding properties of the con-

tact wire under the supports, but does not represent much saving on the full compound-catenary construction.

(d) A twin-catenary forming a triangular arrangement with the contact wire at the inverted apex is occasionally used where stability against wind is required.

(e) Twin contact wires hung on common droppers are employed in the Netherlands to improve the contact with the collector strips on the pantograph and to increase conductivity.

Essentials in Design

The following three essential requirements should be achieved in a good design of overhead contact system:—

1.—Free movement of the contact wire in a vertical direction over the whole route. This means that the vertical movement must not only be unrestricted statically, but also dynamically, so that concentrated masses attached to the contact wire must be avoided.

2.—Accurate positioning of the contact wire in relation to the track, so that the bow of the pantograph makes contact at all times and under all conditions.

3.—The contact network should be cheap, that is economical in construction, operation and maintenance.

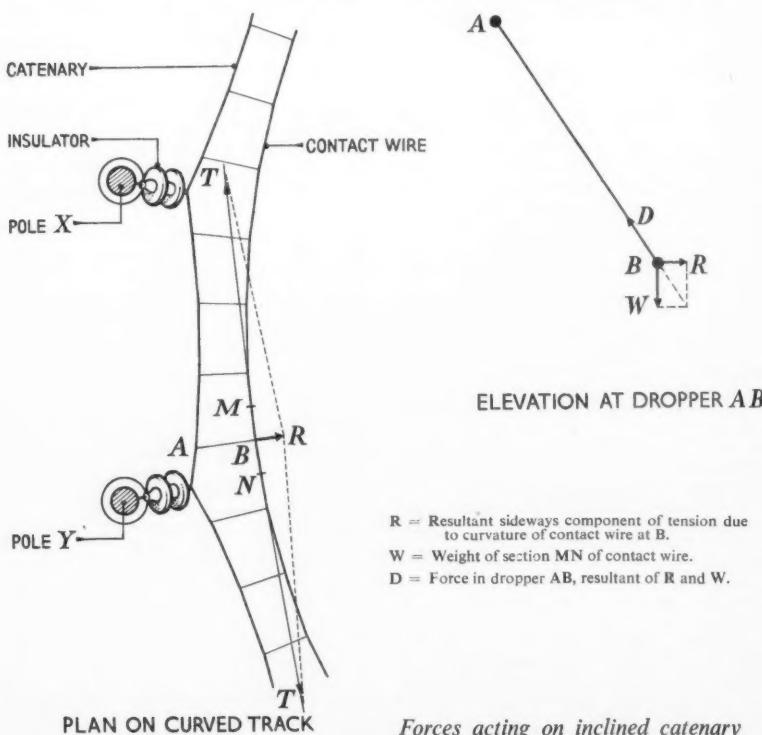
Designs on two entirely different principles have been evolved in order to satisfy these three requirements. Both have their application, and each is specially suited to the traction systems with which they are associated. These are considered in turn under the two section headings of "polygonal" and "flexional."

Polygonal Construction

The basic feature of polygonal construction of the contact system is that the contact wire has only one degree of freedom along its whole length. It is constrained from movement in a horizontal direction by light stays, known as "pull-offs," mounted on each supporting structure and often intermediately on sharp curves. The name "polygonal" arises from the fact that the lengths of contact wire between pull-offs are straight. Polygonal construction is characterised by vertical droppers.

On tangential track the contact wire is made to zig-zag in a horizontal plane by pulling it off to alternate sides of the track centre line. This prevents grooving of the collector strips of the pantographs by the contact wire always running in one place.

Polygonal construction is thus seen to satisfy requirement (2) in the preceding section, for it gives accurate positioning of the contact wire in relation to the track. Requirements (1) and (3), however, are not so well covered, for pull-



offs introduce concentrated masses which tend to cause hard spots in the contact wire, and construction is not so cheap as that described in the following.

In general it is true that polygonal construction is most suited to suburban and semi-suburban systems in which a high density and frequency of traffic prevails. For those suburban systems in which an overhead contact system is used in preference to a third rail, a contact wire voltage of 1,500 V. d.c. is often adopted. Some systems with polygonal construction, however, use a voltage of 3,000 d.c. and this type of construction is also the standard on many a.c. systems.

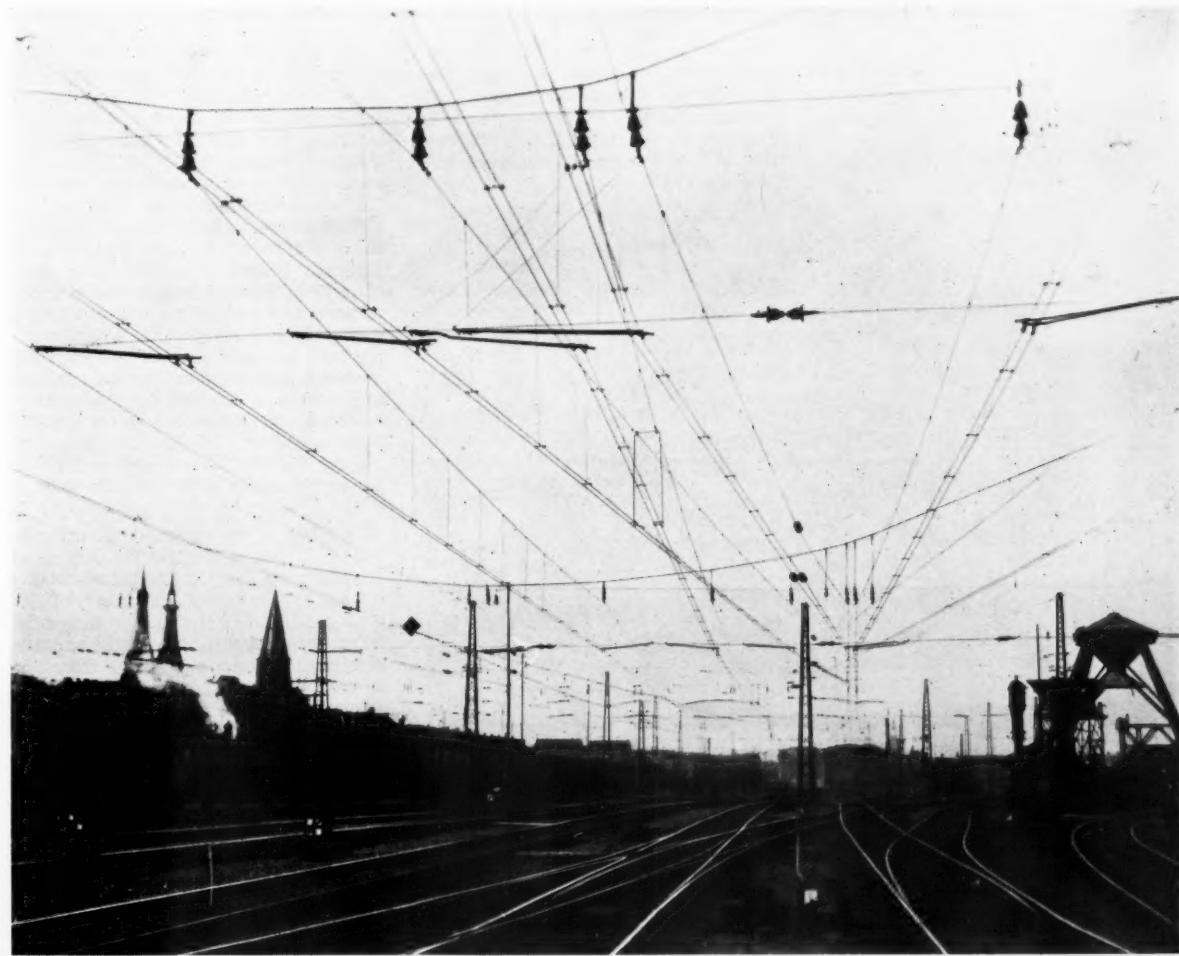
Nevertheless, polygonal construction is specially suited to those traction systems requiring high conductivity between substations and where heavy currents are drawn from the overhead contact systems. Broadly speaking, this type of construction in general implies a heavy and robust contact system in which the conductors maintain their positions with little variation either due to changes in temperature or the passage of trains. This latter feature of



Compound catenary construction on Liverpool Street—Shenfield line

stability of position is obviously of special merit in built-up suburban areas containing many junctions and cross-

overs and in which clearances from tunnel roofs, overbridges, and other structures are restricted.



Simple catenary construction with twin contact wires on the Netherlands Railways. The pull-offs essential to the polygonal construction are clearly visible

Despite the association normally made between the polygonal form of construction and a heavy contact system in which a high pantograph loading is employed (25-30 lb.), reference must be made to the light designs developed in Sweden and elsewhere. In Sweden, especially, a remarkable combination of lightness with strength has been achieved, and the polygonal system evolved there has proved to be economic for the light currents associated with 16-kV. a.c. and the long single-track mileages of the electrified system.

Automatic Tensioning

One further point must be made in connection with the polygonal form of construction. This is the necessity for automatic tensioning of the contact wire where a large daily or seasonal variation of temperature is anticipated. A corollary of the stability of position of the contact wire, which is virtually pinpointed at each pull-off, is the necessity for making provision at the ends of contact wire sections for compensating for expansion or contraction if the tension in the wire is to be maintained constant during severe changes in temperature. Perfect constancy of tension can be achieved only with weights and pulleys, but the maintenance of the latter must be good in order to prevent frictional effects from interfering with the correct automatic compensation for changes in length of the contact wire.



Flexional construction on curved track on part of the 50-cycle experimental electrification near Annecy



A section of flexional catenary on straight track showing opposite pulls on adjacent structures

An alternative method of tensioning, in which maintenance is relatively unimportant, is by means of springs. Some variation in contact wire tension cannot then be avoided. Many systems do not employ tensioning at all, but the variation in temperature is usually moderate

in the areas where they are in force.

A method of construction of the contact system which merits more attention than it has previously been accorded, is that best known as the "flexional" system of contact line construction, although it is also known by various other terms such as "waved," "elastic," or "inclined." Just as the polygonal system employs a contact wire in a series of straight lengths, the flexional system is characterised by a series of curves and counter-curves in the contact wire rather in the manner of a snake. This is brought about by dispensing with pull-offs entirely and applying instead a sideways pull on the catenary at each supporting structure. This sideways pull is transmitted to the contact wire by means of the droppers, the majority of which are therefore inclined at varying angles to the vertical.

On curved track, the sideways pulls are all applied to the same side of the contact wire, that is towards the outside of the curve, so that the contact wire takes up the approximate curvature of the track itself. On straight or tangential track, the sideways pulls are in opposite directions at each supporting structure, so that the contact wire makes snake-like inflections on each side of its mean centre-line, which is vertically above the centre-line of the track.

It will be noted that the flexional, or inclined, construction of the contact system satisfies the two design essentials which are not so well covered in the polygonal construction. These are: (1) free movement in a vertical direction without concentrated masses attached to the contact wire; and (3) cheapness. On the other hand, requirement (2) is not so well covered for the positioning of

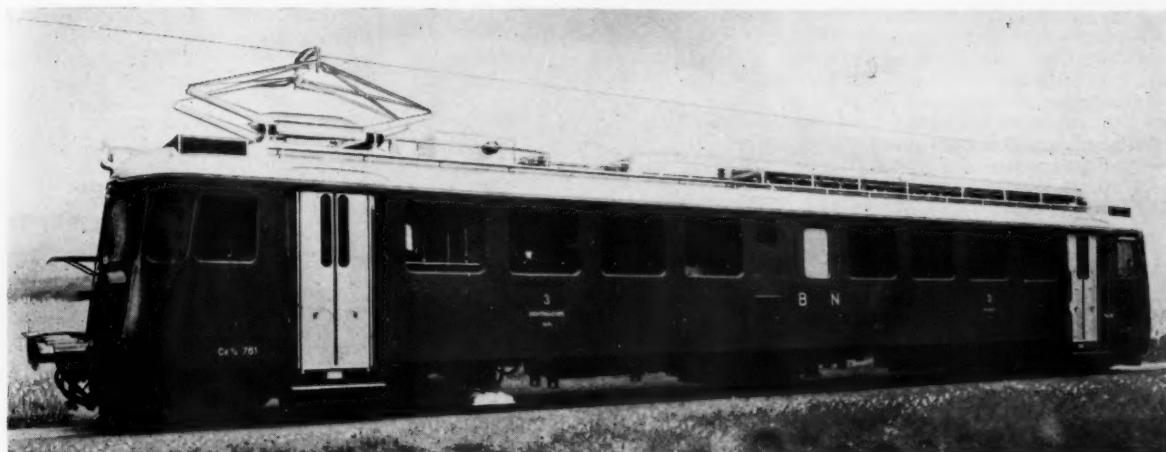


Twin catenary suspension carried on wood poles with side bracket arms on the Otira-Arthur's Pass section of the New Zealand Government Railways

(Continued on page 379)

New Berne-Neuchâtel Railcars

Two vehicles with accommodation for sixty third class passengers



Railcar with smoking and non-smoking compartments and central apparatus section

A NEW railcar for the Berne-Neuchâtel Railway, one of the companies in the Lötschberg group, was placed in service on the Brigue-Spiez-Interlaken line this summer. It was built by the Société Suisse pour l'Industrie, of Neuhausen (Rhine) and is the first of two identical vehicles ordered for the Berne-Neuchâtel Railway with the financial assistance of the Confederation and of the Cantons concerned (Berne and Neuchâtel). The second railcar has been constructed at the Geneva works of the Ateliers de Sécheron, S.A.

The railcar has third class accommodation only (with all seats upholstered) and has two passenger compartments, one for non-smokers (24 seats) and one for smokers (32 seats); in addition there are seats for two passengers in each driving cab, giving total accommodation for 60 passengers. The two passenger compartments are separated by a central compartment having on

one side a cubicle for the transformer and associated apparatus, and on the other a smaller cubicle for other electrical equipment, with an adjoining lavatory. A corridor through the centre of this compartment connects the centre gangways of both passenger compartments.

Adjoining the non-smoking compartment is a luggage compartment with accommodation, if necessary, for standing passengers and four collapsible seats.

An end vestibule adjoins the smoking compartment. Four recessed folding doors, operated pneumatically, on each side of the luggage compartment and of the vestibule, give access to the railcar. The driver, also, usually enters and leaves by these doors, but there is a service door, centrally located, in the front wall of each driving cab. All four axles of the railcar are motored. Westinghouse air brakes and electric rheostatic braking are pro-

vided. The main features of the railcar are as follow:—

Length over buffers	77 ft. 8½ in.
Length of body at buffer height	73 ft. 5½ in.
Height to top of roof	12 ft. 4½ in.
Wheel dia.	3 ft. 5 in.
Bogie wheelbase	9 ft. 10 in.
Bogie pivot centres	54 ft. 1½ in.
Gear ratio	1 : 2.484
Traction effort (maximum)	28,000 lb.
I-hr. tractive effort	18,040 lb. at 43½ m.p.h.
I-hr. rating of unit	2,000 h.p.
Maximum speed	68 m.p.h.
Weight in working order	
Mechanical portion	41 tonnes
Electrical equipment	27 tonnes
Total	68 tonnes

The railcar, built by Sécheron, is slightly lighter than the first vehicle put into service. The first railcar has been working excursion traffic on the Lötschberg main line between Brigue, Spiez, and Interlaken. On the Berne-Neuchâtel line it could operate at speeds up to 56 m.p.h., where track conditions permit. Hitherto, the older Berne-Neuchâtel Railway railcars have operated at speeds of about 30 m.p.h.

Overhead Contact Systems

(Concluded from page 378)

the contact wire in relation to the track is apt to vary not only with the passage of the trains underneath, but also as a result of temperature changes and under the action of external forces.

The tension in the contact wire with the flexional construction remains practically constant, since it is dependent on the inclination of the droppers. Differences in length due to temperature variations are taken up in the degree of inflexion of the contact wire on the tangential sections of track.

The angle of inclination of each dropper to the vertical is determined by

the resultant of two forces: the weight (W) of a section of contact wire of length equal to the distance between two droppers, and the unbalanced sideways component of tension (R) due to the curvature of the contact wire at the dropper (see diagram). The effect of the upward pressure of the pantograph as it passes is to decrease the weight component. As the tension in the wire must remain unaltered the inclination of the droppers must change to preserve the balance of the forces. This is done in part by a radial motion of the contact wire around the catenary and in part by a swinging of the catenary itself from its suspension points.

As a result of the flexibility of the

contact system, sparking due to poor contact at the pantograph strips has been practically eliminated. Wear of the collector strips, which are normally of carbon, is very slight indeed, and of the contact wire almost negligible.

The main advantage of the flexional construction is that it is very economical. Only one insulator per support is required; also, supports can usually be simple poles with short or even no outriggers if the poles can alternate on either side of the track. It is therefore the type of construction to be recommended for use with traction systems employing high-voltage a.c. on the contact wire, in which the main emphasis is on the low cost and lightness of the installations.

Electric Locomotive Tests in Victoria

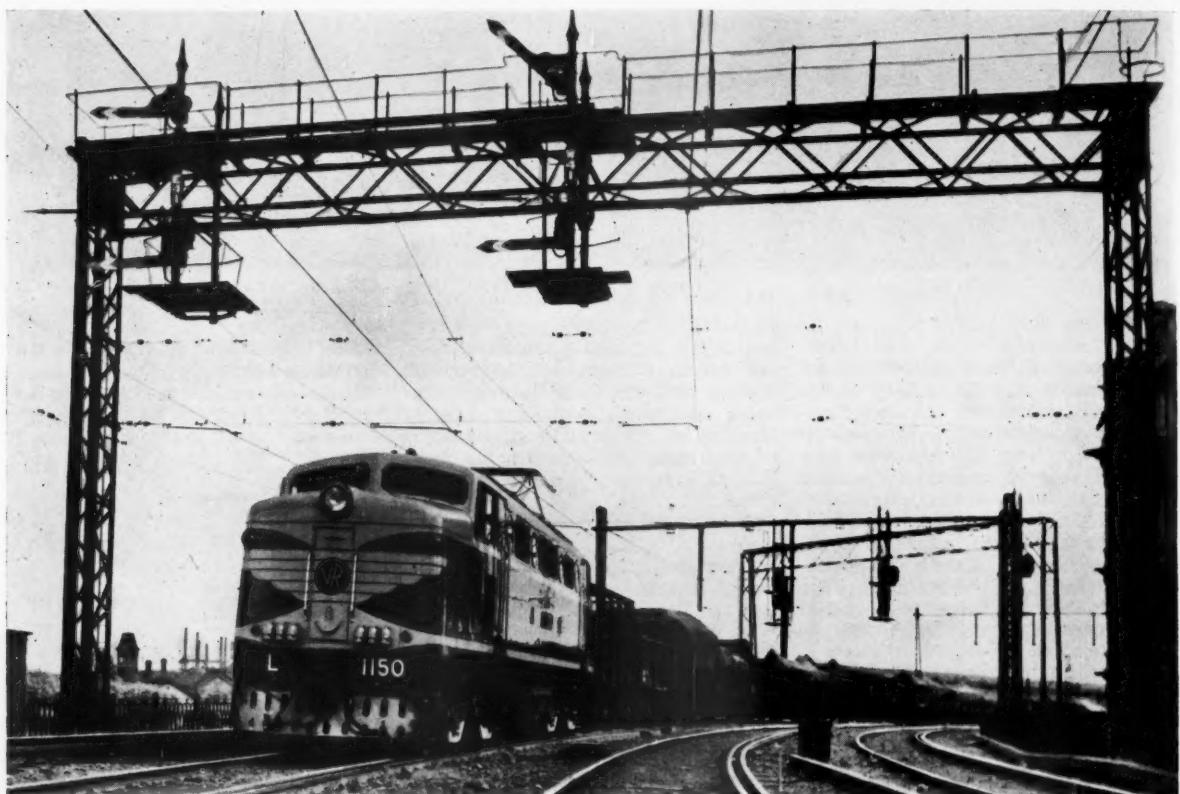
Heavy goods train started and braked on 1 in 50 gradient

A RECENT test of the first of the 25 2,400 h.p. electric locomotives of the Victorian Railways, No. L.1150, on the 1 in 50 grade of Glenroy Bank, on the Melbourne suburban electrified system, was highly successful. Hauling the dynamometer car and goods wagons, which brought the trailing load up to

from the English Electric Co. Ltd., have been delivered and the others are scheduled to arrive at the rate of two a month.

The first electric-hauled train is expected to run between Dandenong, the present terminal of the suburban electrified system, and Warragul, 61

compared with the 1 in 50 on the Herne's Oak route, and will eliminate the necessity for the double heading of coal trains that has to be done now on this section. Excavations made for this spur line disclosed yet another area of high-grade brown coal of considerable thickness.



New Co-Co locomotive built for the Victorian Railways by the English Electric Co. Ltd. hauling a goods train on the Melbourne 1,500V. d.c. suburban system

608 tons, the locomotive, from a standing start, exerted a drawbar pull of 40,000 lb. In a distance of 1,800 ft. the locomotive attained a speed of 19 m.p.h., and accelerated to 30 m.p.h. before reaching the top of the grade. The drawbar pull was maintained above 30,000 lb. throughout the increase in speed.

To test the rheostatic brake on the down grade, the tonnage of the test train was increased to 1,100. The brake was then used with a retarding force of about 45,000 lb., and a speed of 32 m.p.h. was maintained without the use of the air brake. The test proved satisfactory in all respects, the performance of the locomotive completely fulfilling theoretical expectations.

Eight of these locomotives, ordered

miles from Melbourne, towards the end of the year. Meanwhile the electric locomotives are being used on goods traffic on the suburban system around Melbourne.

Cut-off to Ease Gradients

Progress continues at a reduced tempo on the partial duplication and electrification of the Gippsland line as far as Traralgon (97½ miles). The new spur line, which branches from the main Gippsland line at Moe and connects with the marshalling yards at Yallourn, the centre of brown coal mining about five miles away, is nearing completion. It will be used in place of the existing route from Yallourn to Moe, via Herne's Oak and the Haunted Hills. It has grades of 1 in 110 for up traffic

The "L.1150" class was described in our March 20 issue. Recent progress with the Gippsland line electrification and other improvements were the subject of an article in our issue of June 12.

LONDON—LEEDS SLEEPING CAR SERVICES.—The patronage of the sleeping car facilities provided in the 11.50 p.m. from St. Pancras to Leeds City and the 2.45 a.m. return train has resulted in the London Midland and the North Eastern Regions doubling the amount of accommodation provided. Northbound, passengers due Leeds at 6.24 a.m. may stay in their berths till 7.30 a.m.; southbound, may occupy berths from 11 p.m. Sleeping car facilities between London and West Riding are a postwar facility; at no time previously does sleeping accommodation appear to have been provided by either the former Midland or the former G.N.R. routes.

Special Wagons for Transport of Dolomite

High capacity container, capable of discharge to Blaw Knox fettling equipment



Controlled discharge of dolomite from container

RESEARCH conducted by British Railways, Western Region, on the transport in bulk of crushed minerals, such as cement, dolomite, lime and so on, with particular attention to the problems of labour and economics, has resulted in introduction by the Western Region of a steel bottom-door discharge container; a fleet of these vehicles has been used with marked success in the conveyance of cement in bulk from South Wales to the site of the Claerwen Dam, near Rhayader.

Arising out of this container development, proposals were put to the Western Region that it should undertake the construction of a high-capacity type container designed by the International Construction Company for use in conveyance of dolomite (magnesian limestone) from Steetley Works, Taffs Well, to the furnaces of the Steel Company of Wales at Port Talbot.

Discharge to Fettling Equipment

An essential in the design and construction of the container was that it should be capable of discharge to Blaw Knox fettling equipment, which had already been installed at the Port Talbot Works. Fettling is the process by which repairs to the linings of steel furnaces are effected, normally carried out by hand.

The Blaw Knox equipment, designed to feed dolomite into the furnaces, has an endless belt rotating at high speed, on to which dolomite is fed from a hopper. Two of these detachable hoppers, of 450 cu. ft. capacity, equivalent to 18 tons each, are provided for each machine. The railway containers discharge direct

to these hoppers. The dolomite, having been discharged to the hopper, passes through a discharge gate, with a regulated flow, on to the throwing mechanism of the machine, which can be adjusted horizontally or vertically, to direct a stream of dolomite accurately to the point at which repairs to the lining of the furnace are required.

The railway containers on hire to the Steel Company of Wales, loading two to

a wagon, have a capacity of 210 cu. ft. and are designed to carry a maximum load of 8 tons. The loading of one container when carried out by means of a chute can be completed in less than three minutes. Gravity discharge is achieved and controlled to meet requirements by the operation of a hand lever, one of these being available on each side of the container to facilitate working. The dimensions of the container are 9 ft. x 7 ft., with a height from base of legs to apex of cover of 6 ft. 6 in.; the height is increased to an overall measurement of 8 ft. 9 in., however, by a lifting attachment into which the crane hook engages.

BRITISH RAILWAYS' STAFF INTERNATIONAL AMBULANCE COMPETITION.—At the competition held in the St. Andrew's Ambulance Association Headquarters, Glasgow, on September 23, England with an aggregate of 1,309½ points beat Scotland who scored 1,243 points. Mr. C. H. Brazier, Regional Staff Officer, presided, and the prizes were presented by Mrs. Cameron, wife of Mr. T. F. Cameron, Chief Regional Officer, Scottish Region. Mr. W. P. Allen, member of the Railway Executive, complimented the teams on their efficiency in ambulance work and appealed to the younger members of the staff to take an enthusiastic interest in the movement. The respective teams and scores were:—

	England	Pts.	Scotland	Pts.
Kings Cross	283½	Dundee West	268	
Southampton Dks.	274	Motherwell	265	
Newcastle	265	Perth "A"	258½	
Taunton	254	Glasgow (ladies)	237	
Earlestown (ladies)	233	Perth "B"	214	
	1,309½		1,243	



Specially constructed wagons and containers for the conveyance of dolomite

Mixed Gauge in India

Problems of layout and signalling with gauntletted track



Gauntletted track junction between 5-ft. 6-in. and metre gauge tracks at Sipra Bridge, Western Railway, showing 16-lever cabin

THE coexistence in many parts of India of three main gauges, officially known as broad (5 ft. 6 in.), metre, and narrow, the last being any gauge less than metre, and more often 2 ft. 6 in., has led to a certain mileage of mixed gauge in the vicinity of junction stations and transhipment depots. The greatest mileage is in Western and Northern India, where the broad and metre gauge systems impinge at many points. There is less in the South, despite many junctions between the two systems.

The factor resulting in construction of mixed-gauge lines usually is a defile such as an underline bridge or cutting through which the line passes. This may explain the relative absence of gauntletting in the South, though one notable exists in the Kistna bridge south of Bezwada, which is crossed by the broad and metre-gauge track of the Southern, formerly the Madras & Southern Mahratta Railway. On the other hand, in the flat country around Podanur and Coimbatore, there is virtually no gauntletting of former South Indian Railway broad and metre-gauge lines where they converge on these places.

At Agra, in Uttar Pradesh (late United Provinces), there are some miles of gauntletted broad and metre-gauge double track line, believed to be the only considerable stretch of mixed-gauge double line in India.

Three Rails

In nearly all cases of mixed gauge in India, gauntletting is with three rails, one being common to both broad and metre gauge. There are few if any

instances of gauntletting with two entirely separate rails for the narrower gauge inside the broad gauge rails. No instance can be given of any considerable length of narrow- (less than metre) gauge track gauntletted with metre or broad gauge, though at several places all three gauges converge, as at Bangalore City.

Whilst the fact of mixed-gauge track creates its own problems of tracklaying and permanent way repair, not the least of which is the provision of turnouts

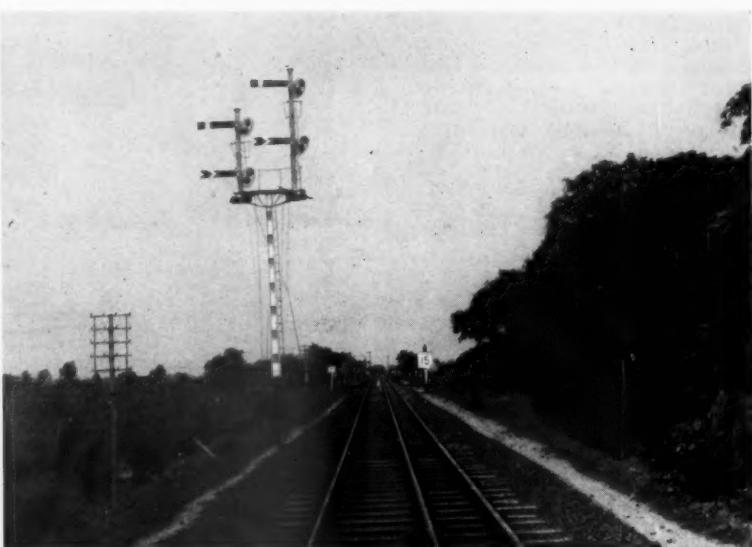
and other point and crossing work, the main problems perhaps are those of signalling.

Signalling

The accompanying illustrations show gauntletted broad and metre-gauge track at Sipra Bridge, 1½ miles from Ujjain. It is the junction between the broad-gauge line from Nagda and the metre gauge from Fatehabad-Chatrapatiganj, both being on the Western (former B.B.C.I.) Railway. Ujjain is an important interchange station with heavy goods traffic. There is also through passenger working from Ratlam via Nagda and Ujjain, Western Railway, to Bhopal, Central Railway. The metre-gauge branch line from Fatehabad to Ujjain was opened in 1876, and the broad-gauge line from Nagda to Ujjain was completed 20 years later.

To interlock the junction at Sipra Bridge a signalbox was installed containing a 16-lever frame. In the down direction outer warner and homes are provided, and bracketed homes and outer warners in the up direction. Similar aspects are provided at Ujjain for the reception of down trains.

As only one train can be on the gauntletted track at a time, the bracketed outer and warners at Sipra Bridge and Ujjain are being removed and single posts provided. The section from Sipra Bridge cabin to Ujjain is signalled by Tyers No. 7 tablet instruments, as also the whole of the broad-gauge branch from Nagda to Ujjain. The metre-gauge branch from Fatehabad to Sipra Bridge is worked by paper line clear ticket on Morse instruments.



Bracketed outer and warner signals at Sipra Bridge junction

RAILWAY NEWS SECTION

PERSONAL

The British Transport Commission announces the following Headquarters appointments and staff changes with effect from October 1, 1953.

Mr. W. P. Allen, Member, Railway Executive, to be Chief of Establishment and Staff.

Mr. David Blee, Member, Railway Executive, to be Chief of Commercial Services.

Sir Daril G. Watson, Member, Railway Executive, to be Chief of General Services.

Mr. S. E. Parkhouse, Chief Officer (Operating), to be Chief of Operating Services.

Mr. R. C. Bond, Chief Officer (Locomotive Construction and Maintenance), to be Chief Officer (Mechanical Engineering).

Mr. J. Ratter, Chief Officer Engineering (Works), to be Chief Officer (Civil Engineering).

Mr. J. H. Fraser, Chief Officer Engineering (Signal and Telecommunications), to be Chief Officer (Signal and Telecommunications). Mr. A. J. Pearson, Chief Officer (Administration), to be Chief Officer (Special Duties).

Except as mentioned above, the titles of the officers of the Railway Executive will remain, pending amalgamation and re-organisation of the staffs of the Railway Executive and the Commission.

HOTEL AND CATERING SERVICES

Mr. F. G. Hole, Member, Hotel Executive, to be Chief of Hotels and Catering Services.

Mr. W. P. Keith, Restaurant Car Superintendent, to be Chief Hotels Officer and Assistant to the Chief of Hotels and Catering Services (in charge of the Southern Group of Hotels).

Mr. E. K. Portman-Dixon, Refreshment Room Superintendent, to be Chief of Restaurant Cars & Refreshment Rooms.

Mr. E. R. Cottet, Chief Hotels Manager (Headquarters), to be Chief Hotels Manager (in charge of the North of England Group of Hotels).

We regret to record the death on September 30, at the age of 67, of Dr. H. H. Cavendish Fuller, Chief Medical Officer to the Railway Executive.

Mr. B. O. Tillström, Manager, Swedish Travel Bureau, is proceeding on extended leave of absence for twelve months. Mr. W. Ferlander has been appointed to act as Manager with effect from October 1, 1953.

We regret to record the death on September 15, in his 54th year, of Sir Thomas A. L. Brocklebank, formerly a Director of the L.M.S.R.

Mr. H. G. W. Gaut, New Works Assistant to the Operating Superintendent, Western Region, British Railways, retired on September 30.

Mr. R. K. Bokil, who, as recorded in our August 21 issue, has been appointed Chief Commercial Superintendent of the Eastern Railway, India, was born on March 11, 1905. A Bachelor of Engineering, Mr. Bokil joined the East Indian Railway as an Assistant Transportation Superintendent (on probation) on May 25, 1929. Three years later he was confirmed in that post. In April, 1937, Mr. Bokil was promoted to officiate as Super-

intendent Claims, on Senior Scale, and in 1940 he became Superintendent Commercial (Senior Scale). On March 16, 1947, Mr. Bokil was promoted as Deputy Chief Commercial Manager (Goods). He officiated as a Divisional Superintendent from 1950, first at Asansol. In 1951 he became Divisional Superintendent at Dinapore and next year he was transferred in the same capacity to Sealdah. On the retirement of Mr. J. N. Das, Mr. Bokil became the Chief Commercial Superintendent, Eastern Railway, on April 6, 1953.

Mr. W. A. Mather, President of the Canadian Pacific Railway, is in this country on a business visit. Mr. Mather is accompanied by Mr. C. E. Jefferson, Vice-President (Traffic), Canadian Pacific Railway, Mr. A. C. MacDonald, Managing Director of Canadian Pacific Steamships, and Mr. G. W. G. McConachie, President of Canadian Pacific Airlines. The visit has particular reference to the company's steamship and airlines operations.

Mr. D. S. Thomson, Vice-President, Winnipeg, Prairie Region, Canadian Pacific Railway, has been appointed to the newly-created post of Vice-President Operation & Maintenance, Canadian Pacific Railway. Mr. Thomson will be succeeded at Winnipeg by Mr. G. N. Curley, who is at present General Manager for the Eastern Region, in Toronto.

Mr. Rodie Wilson has been appointed District Traffic Agent, Glasgow, Canadian National Railways, with effect from October 1. Mr. Wilson succeeds Mr. James A. Cross, who has retired.

Mr. K. R. M. Cameron, who, as recorded in our September 18 issue, has been appointed District Motive Power Superintendent, Kentish Town, London Midland Region, British Railways, graduated B.Sc. with First Class Honours in Mechanical Engineering at Glasgow University and obtained the diploma of the Royal Technical College with Distinction in Mechanical Engineering Design. Mr. Cameron joined the former L.M.S. Railway at St. Rollox Works in 1925 and, after serving in the various shops and the drawing office, was appointed Assistant Foreman, Locomotive Erecting Shop, Crewe, in 1931. He was transferred to Derby as Technical Assistant, Central Order Office, in 1934, and a year later returned to Scotland as Maintenance Assistant to the Superintendent of Motive Power, Glasgow. In 1939 he took charge of Carstairs Motive Power district, but was called to H.M. Forces on the outbreak of hostilities. On his return from overseas in 1945, Mr. Cameron was appointed District Locomotive Superintendent, Perth, and in 1946 was promoted to a similar position at Corkerhill, Glasgow.

With the reorganisation consequent on the formation of the Scottish Region of British Railways he was re-designated District Motive Power Superintendent, Ayr District, on January 1, 1949. Later that year Mr. Cameron became District Motive Power Superintendent, Gorton, Eastern Region, and, in 1950, he went to Kings Cross, Eastern Region, as District Motive Power Superintendent. Subsequently he moved to the Motive Power Superintendent's Office, Liverpool Street, Eastern Region, which he now leaves for his present appointment. Mr. Cameron was commissioned in the Supplementary Reserve of Royal Engineers in 1931, and holds the rank of Lieutenant Colonel in the reconstituted Royal Engineers Supplementary Reserve, commanding No. 80 Railway Workshop Regiment, R.E.S.R.

Mr. John Eaton, General Purchasing Agent, Canadian Pacific Railway, has retired. Mr. T. A. Donovan has been appointed Acting General Purchasing Agent.



Mr. R. K. Bokil

Appointed Chief Commercial Superintendent, Eastern Railway, India



Mr. A. Forester Fielding

Appointed District Operating Superintendent,
Leicester, London Midland Region



Mr. C. H. Adey

District Commercial Superintendent,
Shrub Hill, Worcester, Western Region



Mr. J. Price

Appointed Divisional Transport Officer,
N.E. Division, National Coal Board

Mr. Alan Forester Fielding, District Operating Superintendent, Leeds City, London Midland Region, who, as recorded in our August 7 issue, has been appointed District Operating Superintendent, Leicester, was educated at Derby School and entered the service of the Midland Railway in 1921. After training at various stations and in the Chief General Superintendent's staff office at Derby, he occupied a number of positions, and, in 1935, he was appointed Assistant District Controller at Huddersfield. On mobilisation he was recalled from the Regular Army Reserve of Officers; he was taken prisoner in Belgium in 1940, and as a prisoner of war he passed the examinations of Associate Member of the Institute of Transport. Mr. Fielding resumed railway duty in 1945 as Assistant Divisional Controller (Freight Services), Manchester, and was promoted to be Assistant District

Operating Manager, Rotherham, in 1946. In 1948 he was appointed District Operating Manager, Wakefield, and later redesignated District Operating Superintendent. Mr. Fielding was appointed District Operating Superintendent, Leeds City, in 1950. He is a lieutenant-colonel in the R.E.(Tn.)A.E.R.

Mr. Charles H. Adey, District Commercial Superintendent, Shrub Hill, Worcester, Western Region, British Railways, who retired on September 12 after completing nearly 50 years' railway service, entered the service of the Great Western Railway in the Goods Department at Bristol in 1904. After gaining experience of goods working in various departments, Mr. Adey was appointed Shed Superintendent at Bristol (Temple Meads) in 1930. He was appointed to serve on a commission enquiring into the working at

Paddington Goods Department in January, 1933, and a year later, he was promoted to Goods Agent at Slough, and subsequently, Shed Superintendent at Paddington Goods Station. In January, 1937, Mr. Adey was made Chief Clerk at Paddington Goods Department, and the next January he was promoted to Assistant Superintendent. In March, 1940, he was made Goods Superintendent at Bristol and in May, 1944, he became District Goods Manager, Worcester. In 1950 Mr. Adey was redesignated District Commercial Superintendent, Western Region. As a consequence not only was the staff under his control doubled, but he also became responsible for the commercial aspects of railway passenger travel, including arrangement of special excursions, parties, and provision of cheap ticket arrangements. As part of the policy of vesting in one office control over all railway com-



Mr. H. McBride

Appointed Freight Agent, Liverpool,
Canadian Pacific Railway



Mr. F. G. Streatfield

Freight Agent Liverpool,
Canadian Pacific Railway, 1946-53



Dr. ing. H. C. Seeböhm

Federal German Minister of
Transport

mercial matters in one area, over 30 stations on the old L.M.S.R. line between Birmingham and Cheltenham and branches were placed under his jurisdiction: hitherto these had been supervised from Bristol. He introduced a new fast fruit and vegetable freight service to Newcastle and the North East coast, giving arrivals for early markets the following mornings. He was also responsible for the introduction of electric power pallet trucks at Worcester and Leamington Goods Shed to expedite the handling of traffic.

Mr. W. J. Price, Chief Assistant to Divisional Transport Officer, who, as recorded in our September 18 issue, has been appointed Divisional Transport Officer, North-Eastern Division, National Coal Board, was born in 1911. He entered the service of the L.N.E.R. at York in 1927, where for the next twelve years he worked in various operating department offices in the York area, until transferred to the company's Kings Cross offices in 1939. From then until 1942 he held various positions in the Chief General Manager's Office. In April, 1942, Mr. Price was commissioned into the Royal Engineers (Movements). He subsequently held appointments in Normandy and North West Europe, including that of Movement Officer in Antwerp, followed by a similar position under the Control Commission of Germany. He took part in the restoration of the German Transport System, and was demobilised in June, 1946, with the rank of Lieutenant Colonel, and for his services during the war period was mentioned in despatches. After returning to the L.N.E.R. Mr. Price was appointed in 1947 to the Transport Department of the National Coal Board in London, where he remained until 1949, when he was transferred to the North-Eastern Division of the Board as Chief Assistant to the Divisional Transport Officer.

Mr. H. McBride, Chief Clerk, London, Canadian Pacific Railway, who, as recorded in our September 18 issue, has been appointed Freight Agent in Liverpool, has seen service in Belfast and London, in the City and at the European head office of the company in Trafalgar Square. He joined the C.P.R. in Belfast in 1929 when that office was opened; transferring from W. McCalla & Co., who had been general agents for the C.P.R. in Belfast until then. He was posted to London in 1937 and appointed Travelling Freight Agent in the City office. During the war he was on special port duties and moved about the country to the various docks in connection with the wartime shipping arrangements. He was appointed Chief Clerk in the freight department in 1947, first in the City, where he is widely known, and latterly at the London headquarters.

Mr. F. G. Streatfield, Freight Agent in Liverpool for the Canadian Pacific Railway, who, as recorded in our September 18 issue, is retiring at the end of the month after more than 49 years' service, joined the C.P.R. as a junior in Liverpool in 1904. The following year he was given his first promotion and this took him to the freight department, in which he has been engaged ever since, except for his war service. He was in the Royal Field Artillery in the 1914-18 war, and served on the Western front. He returned to his job in Liverpool office after the war, and by 1935 was in charge of the freight department. In January 1946 he was appointed to the post from which he now retires. Mr. Streatfield is one of the best known personalities in Liverpool shipping

circles and for many years he has represented the C.P.R. at conferences with the other shipping lines and on various committees.

Dr. Ing. H. C. Seeböhm, Federal German Minister of Transport, was born on August 3, 1903, at Emanuelssegen Kreis Pless (Upper Silesia). He was educated at Dresden Grammar School, subsequently studying mining engineering at Freiburg, München and Berlin. In Berlin he passed the state examination and received the degrees of Dipl. Berg. Ing. and Dr. Ing. From 1933-40 he was employed in the Gleiwitz Sosnitza and Beuthen Preussen mine, and, later, at Peine and Dortmund. After the 1939-45 war he was engaged in oil mining in Lower Saxony, simultaneously working as manager of the "Braunschweigische Maschinenbauanstalt". After his denunciation by the Deutsche Partei and his election for the German Federal Parliament he was appointed Federal German Minister of Transport in the Adenauer Cabinet, as from September 20, 1949. A feature of his recent years work was an extensive reconstruction of the entire Western German transport system. The war damages were widely eliminated on the Western German road system, including the Autobahn, and on the inland waterways. The efficiency of all branches of transport have been sufficiently improved as to meet the increasing demands of the Western German economy in full.

Mr. E. C. Weston, Coal Supplies Officer, Derby, London Midland Region, British Railways, retired on September 30.

Mr. B. M. Strouts, M.B.E., has been appointed District Passenger Superintendent, Sheffield, Eastern Region, British Railways, in succession to Mr. K. A. Kindon, with effect from September 21, 1953.

We regret to record the death on September 22, at the age of 74, of Mr. E. F. Merrett, Works Superintendent, Wolverton, London Midland & Scottish Railway, from 1931 to 1939. Mr. Merrett, who acquired a wide experience in the design and construction of rolling-stock in the Oldbury Works of the Gloucester Railway Carriage & Wagon Company, joined the service of the Lancashire & Yorkshire Railway in 1903 as a junior member of the Drawing Office staff. He later became Chief Draughtsman, and, in 1920, was appointed Works Manager, Newton Heath, becoming Works Superintendent, Newton Heath, in 1927, and Works Superintendent, Wolverton, in 1931. On his retirement in 1939, Mr. Merrett retired to Gloucester, where he died. The funeral took place at Quedgeley on September 25.

Mr. Stanley Appleyard retired on September 30, after nearly 52 years' service with the John Brown group of steelmakers and engineers. Mr. Appleyard joined John Brown & Co. Ltd., in February, 1902, and, after 9 years spent in commercial sections at the Atlas Works, Sheffield, he entered the London Office of the company, as a Sales Representative for London and the Southern Counties, and for more than 40 years he has represented Thos. Firth & John Brown Limited in that capacity. Mr. Appleyard will continue to direct Basil Appleyard Limited, of which he is managing director, a company which was formed in recent years which now holds agencies for makers and fabricators of engineers and other specialities in the Midlands and elsewhere.

Mr. H. Wheeler has joined the Board of Barrow Haematite Steel.

Mr. W. Boyd, Mr. E. H. Bramley and Mr. R. S. Hewines have been appointed Directors of Walker Brothers Limited.

Mr. F. R. Stockdill has been appointed a Director of Birmingham & Midland Motor Omnibus Co. Ltd. Mr. C. R. Dashwood has resigned from the Board.

Mr. Robert Ralph Miller, Secretary of S. Lentbloc, Limited, has been appointed a Director as from September 24. He retains the secretaryship of the company.

Mr. Frederick Grant, M.C., Q.C., has been appointed independent Chairman of the Executive Committee of the British Iron & Steel Federation in succession to the late Sir Andrew Duncan.

Mr. Henry Nimmo, C.B.E., M.I.C.E., M.I.E.E., M.I.Mech.E., and Mr. William Linn, M.I.C.E., have been elected respectively President and Chairman of the General Council of the Engineers' Guild for 1953-54.

Mr. S. H. Hvistendahl, M.I.Mech.E., Chief Engineer in the Turbine Division of the Brush Electrical Engineering Co. Ltd., has resigned this position to become head of the Investigation and Tests Department of Merr & McLellan, Newcastle-upon-Tyne.

We regret to record the death of Mrs. Isobel Mary Marshall, wife of the Managing Director of Morrison, Marshall & Hill, Limited, and Secretary & Director of that Company. Mrs. Marshall was also Secretary & Director of the associated companies, C. M. Hill & Co. (Engineers) Ltd., and Marshall-Howlett Ltd. The funeral was held at the Parish Church of St. Mary, Prittlewell, Southend-on-Sea, Essex, at 11.15 a.m. on Wednesday, September 30.

The Aluminium Development Association announces the following changes in the membership of its Council and Executive Committee.

Council:—

Mr. H. E. Jackson has resigned from the A.D.A. Council following his retirement from the Board of Imperial Chemical Industries Limited (Metals Division). His place has been taken by Dr. Maurice Cook. Mr. G. A. Woodruff resigned on retiring from J. Stone & Co. Ltd. He represented L.M.F.A. Development Limited on the Council and his place has been taken by Mr. J. F. Paige of William Mills Limited. Mr. C. W. Cumber, representing Richard Thomas & Baldwins Limited, has resigned on taking up an oversea appointment with his Company; his successor has yet to be appointed.

Executive Committee:—

Following the appointment of Dr. Maurice Cook to the Council, he has been succeeded on the Executive Committee of the Association by Dr. N. P. Inglis. Mr. F. G. Woolard has resigned, following his retirement from the Birmid Group, and his place has been taken by Mr. Harold Goodwin, of Birmetals Limited. Mr. F. R. C. Smith has also resigned, since in his new position in the Aluminium Limited Group it was impracticable to continue representing Aluminium Laboratories Limited on this Committee. Mr. J. H. Mayes, of Northern Aluminium Co. Ltd., has been appointed in his place.

British Transport Commission Statistics (Period No. 8)

Summary of the principal statistics for the four-week period ending August 9

STAFF

	B.T.C. Head Office	British Railways	London Transport	British Road Services	Road Passenger (Provincial)	Hotels & Catering	Ships & Marine	Inland Waterways	Docks, Harbours, Wharves	Railway Clearing House	Commer- cial Adver- tisement	Legal	Films	Total
Number ...	283	603,490	96,251	69,826	63,106	17,032	6,548	4,736	21,105	529	200	331	40	883,477

BRITISH TRANSPORT COMMISSION TRAFFIC RECEIPTS

	Four weeks to August 9		Aggregate for 32 weeks	
	1953	1952	1953	1952
	£000	£000	£000	£000
British Railways—				
Passengers ...	14,339	13,956	71,954	69,788
Parcels, etc., by passenger train	3,015	2,763	23,168	21,632
Merchandise ...	6,630	6,549	64,240	63,596
Minerals ...	2,924	2,738	27,446	25,201
Coal & coke ...	6,036	6,176	65,457	61,350
Livestock ...	124	125	1,217	963
Total British Railways ...	33,068	32,307	253,482	242,530
British Railways, C. & D., etc. ...	827	829	7,081	6,969
British Road Services ...	5,210	4,992	47,426	46,511
Provincial & Scottish Buses ...	5,190	5,008	30,300	28,905
London Transport—				
Railways ...	1,327	1,399	10,979	10,892
Buses & coaches ...	3,244	3,275	24,605	23,838
Trolleybuses & trams ...	686	711	5,554	5,911
Total London Transport ...	5,257	5,385	41,138	40,641
Ships ...	1,631	1,611	7,012	7,086
Inland Waterways : Carrying ...	57	65	558	540
Total Passengers ...	25,872	25,414	146,805	142,705
Total Freight, Parcels & Mails ...	25,368	24,783	240,192	230,477
Inland Waterways : Tolls, etc. ...	96	91	836	817
Docks, Harbours, etc. ...	1,379	1,302	10,096	9,931
Hotels and Catering —				
Hotels ...	441	438	3,407	3,473
Restaurant cars ...	271	267	1,819	1,802
Station refreshment rooms ...	844	751	5,120	4,623
Total Hotels & Catering ...	1,556	1,456	10,346	9,898
TOTAL ...	54,271	53,046	408,275	393,828

LONDON TRANSPORT

	Passenger journeys	Inc. or dec. per cent. over 1952	Car miles	Inc. or dec. per cent. over 1952
Railways ...	000	000	000	000
Buses & coaches ...	227,609	+ 3·1	16,349	- 2·1
Trams & trolleybuses ...	56,484	+ 0·6	27,672	- 0·3
Total ...	326,799	+ 0·8	49,758	- 1·1

INLAND WATERWAYS

Tonnage of traffic and ton miles

	Tonnage	Inc. or dec. per cent. over 1952	Ton miles	Inc. or dec. per cent. over 1952
Coal, coke, patent fuel & peat	000	000	000	000
Liquids in bulk ...	426	+ 2·3	6,033	+ 11·3
General merchandise ...	129	- 4·3	3,634	+ 1·9
Total ...	297	+ 2·8	4,461	- 2·5
	852	+ 1·4	14,128	+ 4·2

BRITISH RAILWAYS

Rolling Stock Position

	Operating stock	Number under repair	Available operating stock	Available stock in 1952
Locomotives ...	18,673	2,957	15,716	15,841
Coaching vehicles ...	57,169	4,839	52,330	52,678
Freight wagons ...	1,120,785	91,258	1,029,527	1,021,974

BRITISH RAILWAYS

Passenger Journeys (Month of June, 1953)

Full fares	Excursions, cheap day, etc.	Other descriptions	Early morning and workmen	Season tickets	Total	Inc. or dec. per cent over 1952
19,960,000	22,671,000	4,559,000	15,840,000	18,575,000	81,605,000	+ 2·9

BRITISH RAILWAYS

Freight tonnage Originating and Estimated Ton-Miles (Period No. 8)

	Merchandise	Minerals	Coal & coke	Livestock	Total	Inc. or dec. per cent over 1952
Tons originating ...	000	000	000	000	000	
Ton-miles ...	3,132	4,301	9,704	58	17,195	- 4·4
	430,679*	343,491	624,997	—	1,399,107	- 0·6

* Includes livestock

BRITISH RAILWAYS (Period No. 8)

	Total steam coaching train-miles	Total electric coaching train-miles	Total freight train-miles	Freight train-miles per train engine-hour	Net ton-miles per total engine-hour	Locomotive coal consumption	
						Total tons	Lb. per engine-mile
1953	16,925,000	3,903,000	9,526,000	9·24	570	968,000	57·6
1952	16,746,000	3,882,000	9,539,000	9·14	565	976,000	58·1

East Indian Railway Annual Dinner

Success of reorganisation in 1925 on the divisional system: the E.I.R. in 1939-45

The fiftieth annual dinner of the East Indian Railway Officers' Association was held in the Connaught Rooms, London, W.C.2, on September 23. The chair was taken by Sir Hugh Hannay, a former General Manager of the E.I.R., Member of the Government of India Railway Board, and President of the Indian Railway Conference Association.

Sir Hugh Hannay, after the loyal toast, proposed that of the "East Indian Railway and its junior partners." He stressed his appreciation of the honour of presiding at the association's jubilee dinner in the centenary year of Indian railways.

When the E.I.R. Company was formed in May, 1845, he said, the outstanding personalities were the Managing Director, R. M. Stephenson, later the first Agent of the E.I.R. in India and J. M. Rendel, the Consulting Engineer. The latter had been in consultation with the directors since 1838, which accounted for Messrs. Rendel, Palmer & Tritton celebrating the centenary of their association with the East Indian in December, 1938. It was a great pleasure to see them so strongly represented at the dinner. Two months after the formation of the company the Managing Director left for India with three assistants to survey the line and prepare estimates, completed in April, 1846, and on their report the Board decided to go ahead.

Simultaneous Construction in Sections

With a view to a quick return on capital, Sir Hugh Hannay continued, the route selected was via Khana, Jamalpur, Allahabad, and Cawnpore to Delhi, with a branch from Khana to Raneeunge. With the same object, it was decided to build the line in sections simultaneously throughout, transport facilities being available by the Ganges or the roads—facilities which reacted seriously against the railway in recent years. After prolonged negotiations with the East India Company, construction began only in 1851. The first section, Howrah to Hooghly, 23 miles, was opened in August, 1854 and, after the Mutiny, the last 1½ miles to Delhi on New Year's Day, 1867. Thus 1953 was the centenary year, as the Great Indian Peninsula Railway had opened its first section from Bombay to Thana in April 1853.

The possibilities of the Jharia coalfield, he went on, were ignored till the late 1880s due initially to the generally accepted view that there was no worthwhile market for coal, though it had been mined in the Raneeunge area for years and boated down to Calcutta. Eventually, in 1894-95 an extension was built from Barakar to Dhanbad, with branches to Katrasgarh and Jharia, a thoroughly bad approach to the coalfield economically and tactically.

Reorganisation and Amalgamation

On January 1, 1925, the E.I.R. was taken over by the State and on April 1, 1925, the Oudh & Rohilkhand was amalgamated with the E.I.R., both railways having been reorganised during those three months on the divisional system. The reorganisation and amalgamation were carried out smoothly and the latter in course of time became a real fusion. In the planned reorganisation there were certain defects, a few of which were realised but could not be eliminated at the time. These and others which came

to light were rectified gradually, some after his retirement.

These processes, Sir Hugh Hannay continued, undoubtedly resulted in a great improvement in administration and operation. The first sign was the disappearance of the friction between the staff of the different branches in the divisions, so common in departmental days. Before and while he had been a Member of the Railway Board, he saw every major railway in India and Burma, but none more efficient or better staffed than the E.I.R. after the amalgamation.

New Grouping of Indian Railways

The other railways with which the E.I.R. recently had been regrouped to form the Eastern and Northern Railways were of much more recent creation than the E.I.R. It was his privilege that evening to propose the time-honoured toast of the East Indian, which no longer was a separate entity; therefore he proposed the prosperity of the "East Indian Railway and its junior partners."

Mr. J. A. Bell, a former General Manager of the E.I.R., proposed the health of the guests. He thanked Mr. R. C. Harvey, Honorary Secretary, for his good work in organising the dinner, and Messrs. Rendel, Palmer & Tritton for placing offices at the disposal of the association. The services of British railway officers on Indian railways, he said, were not fully appreciated in this country.

Sir Edward Bentall, former Member for War Transport in the Governor General's Executive Council, and Chairman of Bird & Company, Calcutta, replying for the guests, said he spoke both as a railway user and as a former Member for War Transport. After briefly tracing the history of the connection between Bird & Company and the E.I.R., he stressed the benefits conferred on India by the E.I.R. and other railways.

E.I.R. in the Second World War

During the war 1939-45, he said, the East Indian was the key railway of India. Its achievements during the war were magnificent, when it had overcome the effects of the 1942 rebellion and the Damodar and other washaways. Its services to the armed forces in the war with Japan were incalculable, and the E.I.R. had done valuable work in moving food to alleviate the Bengal famine.

The good work of the railway went on. The movement of coal over what had been the E.I.R. was greater now than before the war. Former servants of the East Indian had risen high, and he was glad to name among them Mr. F. C. Badhwar, Chairman of the Railway Board.

The following, besides those named above, accepted invitations to be present:—

Members: Messrs. H. J. Allinson, C. A. Beard, N. C. T. Boileau, C. J. Bridges, C. S. Buicke, C. N. Burns, M.B.E., H. Crawshaw, D. J. B. Donoghue, R. J. Earle, F. N. Flatt, C.I.E., E. R. Fleeton.

Brigadier R. Gardiner, C.B.E., Messrs. J. C. Gibson, R. H. Goodman, A. R. Gundry, P. Hackforth, D. W. Hayden, L. Hemmings, J. R. Hemsley, J. W. C. Holt, H. Howe, D. H. Hughes, H. A. Jocelyne.

Messrs. H. L. Kelly, T. T. Lambe, G. T. Lemon, O.B.E., E. Lovett, Sir Robert Marriott,

F. G. S. Martin, C.I.E., M.C., T. S. R. Mills, H. Oakley, R. Oakley, Captain E. M. Padwick, R.E., Messrs. J. F. Pegg, H. W. Puttick.

W. Ramsey, D. D. Roberts, G. W. N. Rose, R. Saunders-Jacobs, H. J. Shailes, M.B.E., B. G. Smith, O.B.E., K. C. Sood, A. Stavridi, M.B.E., C. B. Tilbury.

G. A. R. Trimming, C.I.E., L. D. G. Turnbull, M.B.E., O. R. Tucker, O.B.E., A. V. Venables, M.C., H. C. Wallace, R. M. Watson, and W. W. Whitney.

Guests: Messrs. N. Calder, W. Denby, P. H. S. Drew, M.B.E., E. R. Gee, J. E. G. Palmer, Sir William Stanier, F.R.S., Messrs. J. S. Tritton, and G. R. Wyld.

Visit to Brush Electrical Engineering Works

A conducted tour of the recently completed new Switchgear and Control Gear shop at the Brush Electrical Engineering Co. Ltd. works at Loughborough was made by Sir Harold Roxbee-Cox, Chief Scientist, Ministry of Fuel and Power, and members of the technical press on September 24. The party was accompanied by Messrs. F. J. Lane, O.B.E., M.I.E.E., Mayor of Loughborough; E. L. Gethin, A.M.I.E.E., Contracts Department, British Electricity Authority; and O. S. Woods, A.M.I.Mech.E., A.M.I.E.E., Chief Generation Engineer, East Midlands Division, British Electricity Authority.

Switchgear and Circuitbreakers

The newly erected shop has a floor space area of some 150,000 sq. ft., doubling the previous capacity. A large proportion of the switchgear built at the works is of the metalclad type for voltages up to 15 kV. and for breaking capacities up to 350 mVA.

There are also under construction outdoor circuitbreakers for 33 kV. services with a breaking capacity rating of 750 mVA. For low voltage systems there is also a range of industrial pattern circuit-breakers and high breaking capacity fuse switch gear, together with special control gear for traction and marine service. Electrical testing before despatch takes place in an enclosure where a transformer is located for voltage testing up to 100 kV. and current transformers for injection testing, heat runs, etc., up to 3,000 amps. A separate workshop is provided for development and research; in this department prototypes of new designs are manufactured and tested before submission for short circuit testing.

The party also saw a new balancing machine with greater capacity and facilities for balancing and overspeeding alternator rotors and for balancing at machine speeds, the combined alternator rotor and overhung blade system of the Ljungstrom turbo-alternators. The machine will ensure a more accurate balance being obtained and a considerable saving in time. The tour also included inspection of the research laboratories.

RAILWAY BENEVOLENT INSTITUTION.—At a meeting on September 23, the Board of the Railway Benevolent Institution granted annuities to 14 widows, nine members, and one child involving an additional liability of £448 per annum. Ninety gratuities also were granted, amounting to £935, to meet cases of immediate necessity. Grants from the Casualty Fund during the months of July and August totalled £1,059.

Lancaster-Morecambe-Heysham Electrification

Inspection of London Midland Region line recently converted to 50-cycle, single-phase, a.c. working

On September 29 an inspection of the Lancaster-Morecambe-Heysham section of the London Midland Region, which is being operated experimentally on the 50-cycle, single-phase, a.c. system, using current at 6,600 volts, was staged by British Railways, the English Electric Co. Ltd., and British Insulated Callender's Cables Limited, in association. The party included more than 150 officers of British Railways and the contractors, representatives of Government departments, overseas governments and railway administrations, professional bodies, and the technical press.

Among those accepting invitations were:

Messrs. C. E. Allen, Chief Traction Engineer, B.I.C.C. Co. Ltd.; D. S. M. Barrie, Public Relations Officer, Railway Executive; Sir Eric von Bibra, Agent-General for Tasmania; Messrs. David Blee, Member, Railway Executive; M. R. Bonavia, Chief Officer (New Works), and R. C. Bond, Chief Officer (Locomotive Construction & Maintenance), Railway Executive; E. Bowyer, Manager, Production, and C. O. Boyse, General Manager, B.I.C.C. Co. Ltd.; W. C. Brudenell, Editor, *British Railways Magazine*;

Messrs. J. I. Campbell, Civil Engineer, Eastern Region; J. A. Clarke, General Manager, Ulster Transport Authority; C. M. Cock, General Manager, Traction Department, English Electric Co. Ltd.; E. S. Cox, Chief Officer (Design), Railway Executive; F. W. Crews, Secretary, Institute of Transport; O. J. Crompton, Manager, Tract on Contracts, and R. A. Crook, Manager, Engineering Production Division, B.I.C.C. Co. Ltd.;

The Hon. J. A. Dimmitt, Agent-General, Western Australia; Messrs. G. di Raimondo, Director General, Italian State Railways; George Dow, Public Relations & Publicity Officer, London Midland Region; John Elliot, Chairman, Railway Executive; R. W. Foxlee, Chief Civil Engineer, Crown Agents for the Colonies; J. H. Fraser, Chief Officer (Engineering), Signal & Telecommunications, Railway Executive; Senor Don Juan Gatto, Chief Engineer, Argentine Purchasing Mission; Messrs. E. Hansen, Divisional Engineer, Danish State Railways J. F. Harrison, Mechanical & Electrical Engineer, London Midland Region; Randal J. Harvey; R. F. Harvey, Chief Officer (Motive Power), Railway Executive; S. G. Hearn, Operating Superintendent, London Midland Region; T. M. Herbert, Director of Research, Railway Executive; C. C. Inglis, Director of Research, British Transport Commission; W. A. Kinsman, Traction Engineer, B.I.C.C. Co. Ltd.;

Sir John Lienhop, Agent-General for Victoria; Mr. W. H. McFadzean, Deputy Chairman & Chief Executive, B.I.C.C. Co. Ltd.; Colonel D. McMullen, Inspecting Officer of Railways, Ministry of Transport; Mr. L. N. Mathur, Indian Railway Board; Senor Don Antonio J. Moreno, Economic Attaché, Venezuela Embassy; the Hon. D. J. Muir, Agent-General for Queensland; Messrs. O. S. Naylor, London Agent, Rhodesia Railways; S. M. Nazir, Commercial Secretary (Supply), High Commissioner's Office, Pakistan;

Messrs. S. E. Parkhouse, Chief Officer (Operating), Railway Executive; A. J. Parmanier, French National Railways; A. J. Pearson, Chief Officer, Administration, Railway Executive; F. A. Pope, Member, British Transport Commission; H. Randle, Carriage and Wagon Engineer, London Midland Region; J. Ratter, Chief Officer (Engineering Works), Railway Executive; G. L. Rhodes, Manager (Export), B.I.C.C. Co. Ltd.; R. A. Riddles, Member, Railway Executive; A. E. Robson, Chief Officer (C. & W. Construction and Maintenance), Railway Executive; Lt.-Colonel Sir Ronald Ross, Bart., Agent for Northern

Ireland; Mr. D. H. Rosser, Trade Commissioner, Nigeria Office;

Mr. D. P. Sayers, Deputy Chief Engineer (Transmission), B.E.A.; Lt.-General Sir Ronald M. Scobie, Director, B.I.C.C. Co. Ltd.; Messrs. G. S. Simmons, Messrs. Freeman Fox & Partners; R. A. Smeddle, Mechanical and Electrical Engineer, Western Region; R. C. Smith, Electric Traction Engineer, and J. Taylor Thompson, Civil Engineer, London Midland Region; Dr. Petar Tomic, Commercial Counsellor, Jugoslav Embassy;

The Hon. J. M. Tully, Agent-General for New South Wales; Messrs. S. B. Warder, Chief Officer (Electrical Engineering), Railway Executive; J. W. Watkins, Chief Regional Officer, London Midland Region; E. L. E. Wheatcroft, Merz & McLellan Limited; C. C. H. Wade, English Electric Co. Ltd., and Sir Reginald Wilson, Comptroller, British Transport Commission.

The line was electrified at 25 cycles, 6,600 volts, by the Midland Railway in 1908. In view of the need two years ago to replace the original rolling stock, it was decided to take the opportunity of converting the line to 50-cycle working, to provide a testing ground here for this system. The original overhead equipment was in good enough condition to be suitable for use at the higher frequency. The English Electric Co. Ltd. supplied the traction equipment for the three three-car sets, adapted from four-rail d.c. stock, which are maintaining public service over the line, and that for the substation. The overhead line work was entrusted to British Insulated Callender's Cables Limited.

On arrival from Euston at Lancaster Castle Station the party entrained in one of the three-car sets for Lancaster Green Ayre Station, where the new substation replacing former plant at Heysham was inspected. After reversing, the train proceeded for a short distance towards Morecambe Promenade and then halted to allow passengers to alight and walk along the track to observe an experimental length of new light overhead structures of different designs with which British Insulated Callender's Cables Limited has here replaced the old-type pylons.

At Morecambe, where the party was entertained to tea, Mr. John Elliot, Chairman, the Railway Executive, in welcoming the guests, paid a tribute to what he called the "honest, productive work" put into the project by Mr. R. A. Riddles. He was glad that they had with them that day Sir Reginald Wilson and Colonel D. McMullen.

Mr. C. M. Cock stressed the importance of 50-cycle traction in overseas business and said that his company was proud to have been associated with British Railways in this venture. The happy collaboration with British Railways and the English Electric Co. Ltd. was expressed by Mr. McFadzean, British Insulated Callender's Cables Limited.

Mr. J. A. Broughall explained that the cost of fixed structures was one of the reasons for the slow progress of electrification in this country, but the 50-cycle system showed to best advantage in this. He referred appreciatively to the pioneering in 50-cycle traction by the Hungarians and Germans and the most skilful work put in subsequently by the French National Railways. What they had to show today was the child of the visit to the experimental 50-cycle line of the S.N.C.F. in the Annecy district made by British Railways officers.

They recognised the value of the S.N.C.F. experience, but considered it best to make their own mistakes while learning about the difficulties of the system. The equipment was far from typical of what might be expected to develop in ordinary circumstances and there was no reason why 50-cycle locomotives here should not be as satisfactory as those in France. One difficulty was the tightness of the loading gauge and the scant clearances.

Before returning to London by special train the party was able to inspect exhibits of equipment and photographs shown by the contractors and then the equipment installed in one of the electric trains drawn up in Morecambe Promenade Station.

NYASALAND RAILWAYS LIMITED—After providing for interest on the first debenture stock, Nyasaland Railways Limited is to pay £79,719 as interest on the five per cent consolidated income debenture stock, stated the chairman and managing director, Mr. W. M. Codrington, at the company's 22nd annual meeting. This is equivalent to a payment at the rate of 2½ per cent. Editorial comment on the full 1952 annual report appeared in our issue, September 12.

EXCURSION PROGRAMME FOR GLASGOW AUTUMN HOLIDAY.—Weekend trips to the Lancashire coast for the illuminations at Blackpool and Morecambe; special excursions to Belfast via Stranraer, Fort William, Oban, Newcastle, Aberdeen, and so on, and race specials to Hamilton were features of the programme of excursions arranged by the Scottish Region in connection with the Glasgow Autumn Holiday. Among special excursions last Sunday were trips to Grantown-on-Spey, and on Monday there were excursion services to North Berwick, the Fife coast, Girvan, and other resorts.

PORTABLE PRESTRESSING JACK.—A demonstration of a new Gifford-Udall prestressing jack was given in London on September 25; the jack, which has been developed in conjunction with the C.C.L. anchorage system, is the result of close co-operation between the J. J. Udalls Building Co. Ltd., of Southampton, and Cable Covers Limited, of Westminster. The jack will tension any size of wire up to 0.276 in. and for post-tensioned work the wires can be arranged in groups of up to 12 wires in each duct. It is designed to grip, extend, and anchor a wire without any risk of slipping; extension is measured against an adjustable rule and load on a direct reading gauge. The jack and pump complete are easily transportable, having a combined weight of 56 lb.

BRITISH TRANSPORT PUBLIC RELATIONS OFFICE.—With the disappearance as from October 1 of the Railway, Road Haulage, Docks & Inland Waterways and Hotels Executives, and with the removal of the Commission's headquarters to 222, Marylebone Road, the office of the Chief Public Relations & Publicity Officer, Mr. J. H. Brebner, will be directly responsible for all enquiries which have previously been addressed to these Executives. The public relations, press and library staff concerned will be re-grouped and consolidated. Enquiries may be directed to the Public Relations Officer or the Press Officer. The telephone number will be Ambassador 7711. Telegrams, "Britravel, Norwest, London." The Department of the Chief Public Relations & Publicity Officer will move from 55, Broadway on Monday, October 12.

Kilsby Tunnel Closed for Drainage

Kilsby Tunnel, between Welton and Rugby, on the London Midland Region Western Division main line has been closed to all traffic for the five weeks from September 28 to October 31, while 250 men working in shifts 24 hr. a day execute a new drainage scheme to allow of unrestricted train speeds in the tunnel.

The work involves the total removal of the permanent way, and ballast down to the tunnel invert level, the construction of a new culvert and cross drain system, partial channel drainage along the tunnel walls, the erection of down pipes, the construction of two new reinforced concrete rafts under the main shafts, and the formation renewal of the northern approach, total reballasting, and replacement of permanent way.

The contractors, Leonard Fairclough Limited, are using dragline excavators, bulldozers, a tracklaying machine, diesel locomotives, and over 2,500 wagons to complete the work in the scheduled time.

Kilsby Tunnel is 1 mile 666 yds. long. There were many difficulties during its construction in 1838; Robert Stephenson, who was the engineer of the works, had to design special equipment to deal with the large quantity of water found and the tunnel throughout its life has given rise to serious drainage problems.

Diversions of Trains

While the tunnel is closed passenger trains are being routed *via* Northampton or diverted to St. Pancras; and special arrangements are being made to minimise delays.

Some of the principal passenger train alterations are:—

The 9.35 p.m. and 10.30 p.m. Glasgow to Euston and 8.30 p.m. Windermere to Euston are diverted to St. Pancras *via* Nuneaton; the sleeping cars in the last-

named train are transferred at Crewe to the 5.40 p.m. from Glasgow, which runs into Euston.

The 7.30 a.m. from Holyhead to Euston and the 8 a.m. from Blackpool to Euston are combined from Crewe on Tuesdays, Wednesdays, Thursdays, and Fridays, and convey the through Birkenhead to Euston coaches; it runs independently on Mondays and Saturdays.

The 10 a.m. Blackpool to Euston terminates at Crewe on Tuesdays, Wednesdays, and Thursdays; on Mondays, Fridays, and Saturdays it works through to Euston.

On Tuesdays, Wednesdays, and Thursdays when the 10 a.m. from Blackpool terminates at Crewe, the 8.25 a.m. from Carlisle conveys the through Workington to Euston coaches.

The through Birkenhead to Euston coaches conveyed by the 10.55 a.m. from Birkenhead and the balancing coaches on the 2.30 p.m. from Euston are withdrawn on Tuesdays, Wednesdays, and Thursdays.

Goods trains are being diverted via Northampton and to a variety of other routes, and although some delays may occur, every effort is being made to deliver goods on time.

Electrification to Southend and Chelmsford

A decision to extend the existing Liverpool Street—Shenfield electrification to Chelmsford and to Southend (Victoria) has been announced by British Railways, Eastern Region. The total cost will be about £2,500,000, and work will begin as soon as possible. The new mileage to be electrified totals about 9½ route-miles from Shenfield to Chelmsford, and 21½ from Shenfield to Southend Victoria.

It is expected that when this additional

electrification is in operation, the standard journey time of the regular-interval electric services from Liverpool Street to Southend Victoria will be one hour, with six intermediate stops. There will be faster trains in the morning and evening peak periods. Twenty-two electric trains between Liverpool Street and Shenfield will be extended to Chelmsford, thus increasing the present local service by more than 50 per cent and providing through electric services between Chelmsford and Romford, Ilford, and the suburban area generally.

New All-steel Trains

Electric sets for the Southend services will be built to a new pattern specially designed to suit both daily travellers and holiday visitors. The trains will be made up of four-coach units of all-steel construction, each unit providing 373 seats; of the 354 third class seats, 145 will be in open-type vehicles with centre gangway and the remainder in compartment-type coaches. Two vehicles in each unit will have toilet accommodation.

Doors will be provided for each compartment and each bay of the open stock, in accordance with the arrangement which has been found from experience in the Southern Region to give the quickest loading and unloading.

Planning for Tilbury Line Electrification

The decision to electrify the lines from Shenfield to Chelmsford and to Southend Victoria forms an integral part of the general programme of improving railway facilities between London and the Essex residential areas. The extension of the Liverpool Street—Shenfield electric services forms an essential and preliminary step to the larger scheme of electrification from Fenchurch Street to Tilbury and Southend Central. Technical planning for this larger electrification is now well in hand, but exceptionally important engineering works will first have to be completed on the Fenchurch Street line, including the reconstruction of Barking Station, the rearrangement of tracks with a fly-over, and the construction of a large new marshalling yard, also at Barking. These will take some years to complete.

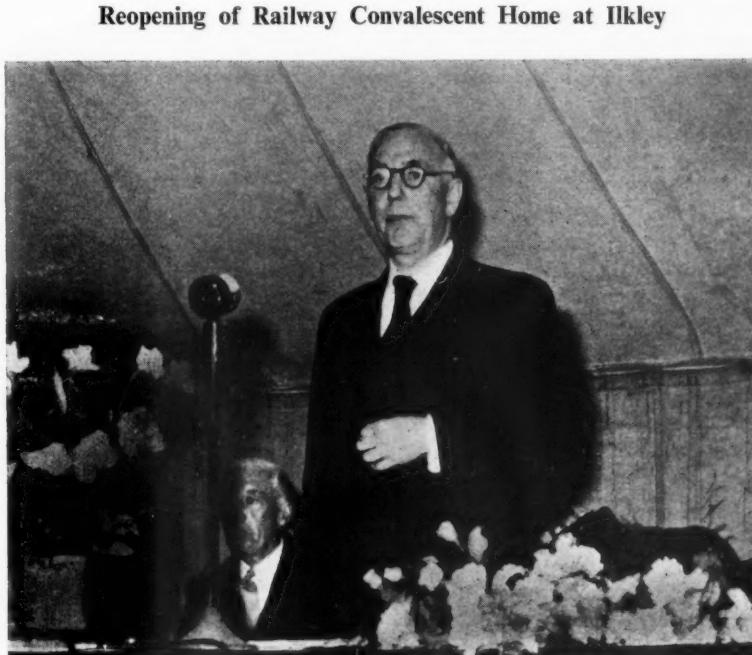
On the other hand, the extension of electrification from Shenfield to Chelmsford and Southend is a straightforward scheme, with no major engineering works, which it is hoped can be finished by January, 1957. Fast electric services should, therefore, be already running on the Southend—Liverpool Street route by the time the heavy engineering works on the Fenchurch Street line begin to cause some delays on that route; the reserve capacity of the electrified Liverpool Street line will then be of considerable benefit to Southend travellers.

Contracts & Tenders

Laidlaw, Drew & Co. Ltd. has received orders for oil-firing equipment for 40 locomotives for the Sudan Railways; those for 20 from the Sudan Government and for the other 20 from the North British Locomotive Co. Ltd.

The contract for 624 Athermos axle-boxes, one of the three received by Société Générale Isothermos and detailed in our last week's issue, has been placed by Société Générale de Constructions Électriques et Mécaniques Als-Thom.

The British Railways, North Eastern



Sir John Benstead, Deputy-Chairman of the British Transport Commission, at the reopening of Ardenlea convalescent home. (See article in our issue of September 25)

Region, have placed the following contracts:—

J. Mather & Son, Hull: Extensions and alterations to Goole Station
J. B. Corrie & Co. Ltd., London, S.W.1: Chain link fencing in Newcastle district

The Director General of Supplies & Disposals, Railway Stores Directorate, New Delhi, is inviting tenders for the following:—

1,152 bogie horn check (B.G.) for B.G. coaching under frames to I.R.S. drawing W-626 Alt. 9 and to I.R.S. specification No. M-31/49 (iron casting Grade 17)

Tenders are to be submitted to the Director General of Supplies & Disposals, Shahjahan Road (Section SRI), New Delhi, quoting reference SRI/16729-D/I, by October 20.

British Railways, North Eastern Region, have placed the following contracts:—

Samuel Flockton Limited, Leeds: erection of platelayers' cabins, Leeds District.

Lister Brook & Co. Ltd., Brighouse: recladding of roof, Cross Gates Station.

Alston Limestone Co. Ltd., Newcastle: repair of roadways, Gilesgate Goods Station, Durham, and of approach road to auction mart, Ponteland.

The Director General of Supplies & Disposals, Railway Stores Directorate, New Delhi, is inviting tenders for:—

1,470 rings malleable cast iron piston packing Britimp patent with garter springs complete for "PT" and "YG" class locomotives rough bored to 2½ in. to drawing No. SC.47/29/5 (D.G.S. & D. No. 6257) and L/PK.611 alt.1 rings to MCI to B.S.310—1947 grade 3. Black heart and springs to I.R.S. Specification No. M-18-50

Tenders are to be submitted to the Director General of Supplies & Disposals, New Delhi, quoting reference SRI/16647-D/I by October 20.

The Director General of Supplies & Disposals, Railway Stores Directorate, New Delhi, is inviting tenders for:—

145 axlebox (cast steel) 7 in. x 4 in. journal I.R.S. type complete with back plates welded on I.R.S. WA-1405 to I.R.S. drawing No. WA-1405 Alt.9 and to I.R.S. Specification No. R-7/49 (M-2/48 Class A, Grade II)

Tenders are to be submitted to the Director General of Supplies & Disposals, New Delhi, quoting reference SRI/16732-D/I by October 21.

The First Secretary (Commercial) of the British Embassy, Santiago, has notified two calls for tenders by the Chilean Port Authorities for the supply of:—

Tender No. 10: two diesel-hydraulic locomotives, each of 360 h.p., 40 tons service weight, 12,500 kg. tractive effort at 0.3 adhesion factor, maximum speed 45 km.p.h., metre gauge, minimum radius of curves 80 metres

Tender No. 11: three diesel-hydraulic locomotives, each of 360 h.p., 40 tons service weight, 12,500 kg. tractive effort at 0.3 adhesion factor, maximum speed 45 km.p.h., 1-676 metre gauge, minimum radius of curves 90 metres

Offers of diesel-mechanical or diesel-electric locomotives will be considered provided that their characteristics and weight conform to the specifications given in the tender documents, which are available for inspection at the Board of Trade Export Services Branch, Lacon House, Theobalds Road, London, W.C.1.

The Special Register Information Service, Export Services Branch, Board of Trade, states that the State Railways of Thailand are calling for tenders for:—

(a) 60 Lb. Rails and Accessories
3,100 rails 9 m. long*
3,700 rails 8 m. long*
104,000 track spikes*
(b) 70 Lb. Rails and Accessories
19,220 rails 12 m. long**
130 rails, 11 m. long**
21,300 prs. fishplates**
149,500 fish bolts and nuts**
324,400 bearing plates**
1,194,800 track spikes**
149,500 spring washers**
(c) 70 Lb. Rails and Accessories
(alternative to (b))
19,220 rails 12 m. long†
130 rails 11 m. long†
21,300 prs. fishplates†
149,500 fish bolts and nuts†
324,400 bearing plates†
1,194,800 track spikes†
149,500 spring washers †

* Signifies drawing 1882-70, which shows the standard 70 lb. rail section and accessories ; ** signifies drawing 1882-71, which shows the new 70 lb. rail section only, but a note on it reads "The above section calls for the design of fishplates, as well as position of holes in fishplate and in rail, fishbolt and nut, bearing plate, and dogspike that shall fit the profile of the new rail and shall be in position in the same manner as those of the standard rail shown on Drawing Bo. 1882-70" (signified by †)

Sealed tenders should reach the Superintendent of Railway Stores, Bangkok, accompanied by the receipt for a deposit of bahts 100,000, not later than 2 p.m. on October 14. Prices may be quoted in baht, pounds sterling or U.S. dollars. A copy of the tender documents, with specification and drawings, is available on loan from the Branch, Lacon House, Theobalds Road, London, W.C.1.

Notes and News

Leading Draughtsman Required.—Applications are invited for the post of leading draughtsman required by the Crown Agents for the Colonies in its London Office. See Official Notices on page 391.

Boiler Inspector Required.—Applications are invited for the post of boiler Inspector required by the Sierra Leone Government Railway for one tour of 18 to 24 months with prospect of permanency. See Official Notices on page 391.

East Indian Railway Officers' Association.—On September 24 the East Indian Railway Officers' Association held its annual reunion tea party at St. Ermin's Hotel, Caxton Street, London, S.W.1. The party was attended by some 55 members and their wives and families.

Vacancy for Assistant District Superintendent, Traffic.—Applications are invited for the post of assistant district superintendent, traffic, required by the Nigerian Government Railway for tour of 12 to 24 months with prospect of pensionable employment. Candidates must have thorough experience in both commercial and operating railway subjects, including operating statistics. See Official Notices on page 391.

Road Accidents: July and August.—Road casualties in August, according to reports so far received, totalled 21,829, 584 more than in August, of last year and including 453 killed, an increase of 15. This was nearly 1,000 fewer than in July, when casualties numbered 22,760, of which 430 were fatal and 5,551 seriously injured. Detailed figures for July, compared with the same month last year, showed a marked rise in casualties to drivers and passengers. The provisional figures for August bring the total number of casual-

Doncaster Plant Centenary Exhibition



Mr. R. A. Riddles opening the Doncaster Works Centenary Exhibition on September 19. On his right is Mr. C. K. Bird, Chief Regional Officer, Eastern Region, and on his left the Old Works Bell. (See article in our last week's issue)

OFFICIAL NOTICES

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive, or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

BOILER INSPECTOR required by the SIERRA LEONE Government Railway for one tour of 18-24 months with prospect of permanency. Salary (etc.), £1,011 a year. Outfit allowance £60. Free passages. Liberal leave on full salary. Candidates must have served an apprenticeship as a Boilermaker in the works of a British Railway or Locomotive Builders and have had at least seven years' subsequent experience in that trade. A knowledge of electric welding processes is essential. Write to the CROWN AGENTS, 4, Millbank, London, S.W.1. State name in block letters, full qualifications and experience and quote M2C/30157/RA.

RAILWAY MECHANICAL ENGINEER required by manufacturers of specialised equipment used in all types of motive power and rolling-stock. Training of approximately two years' duration would be given with a view to employment as sales engineer. Preference given to university graduate, under 30 years of age, who has served apprenticeship with a railway. Salary during training approximately £550, depending on qualifications.—Box 940, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

N.E.R. HISTORY.—Twenty-Five Years of the North Eastern Railway, 1898-1922. By R. Bell, C.B.E., Assistant General Manager, N.E.R. and L.N.E.R. Companies, 1922-1943. Full cloth. Cr. 8vo. 87 pages. 10s. 6d.—*The Railway Gazette*, 33, Tothill Street, London, S.W.1

ties in the first eight months of the year to over 148,000, including 3,161 killed; compared with the same period last year these figures show increases of over 10,600 in the total and 178 in the killed.

L.M.R. Goods Depots Closed.—Birdingbury goods depot, between Leamington Spa Avenue and Rugby Midland, was closed for all traffic on August 3, and from the same date, Newton-le-Willows goods depot, between Kenyon Junction and Liverpool, for all traffic except livestock. Alternative arrangements have been made in each case for dealing with goods traffic.

Institute of Transport: Weekend Course at Ashridge.—The Institute of Transport has co-operated with Ashridge College in the arrangements for a weekend course on "The Changing Face of Transport" to be held from Friday evening, November 6 to Monday morning, November 9, 1953. Mr. John Elliot, President of the Institute, will give the opening address. The course is open equally to members of the Institute and to non-members, and ladies may also attend. The inclusive cost will be £3 15s.

Institute of Traffic Administration.—A special open meeting will be held under the auspices of the North Staffs Centre, on Friday, October 16, at 7.30 p.m. at the North Stafford Hotel, Stoke-on-Trent, to discuss "What Industry requires from Transport." Lord Merrivale, of Walsingham, President of the Institute of Traffic Administration, will preside, and speakers will include Mr. Ellis Smith, M.P., Mr. A. E. Cooper, M.P., and Mr. S. H. Jerrett, Deputy Director, British Pottery Manufacturers' Federation.

Davey, Paxman Generator: Valuable Assistance at Whitemoor.—To ensure continuity of electricity supply at Whitemoor yard the Eastern Region authorities, finding it necessary to adjust the existing steam generating plant, arranged to take current from the grid for the period of the overhaul. The high winds of the night of September 21 damaged the overhead wires, and current failed completely at

LEADING DRAUGHTSMAN required by the CROWN AGENTS FOR THE COLONIES for the London Office. Salary £570 x £20 to £670 x £5 to £675 a year. Pay Addition to basic salary payable at the rate of 10% on first £500 and 5% on remainder. Extra Duty Allowance of 8% on annual basic salary plus Pay Addition also payable at present. Engagements to be on established terms, terminable by one month's notice on either side, with the prospect, after satisfactory service, of appointment to the established and pensionable staff, vacancies permitting, and promotion to more senior grades if suitably qualified. The normal working week is 45 hours and Extra Duty Allowance is paid for hours worked in excess of 42. QUALIFICATIONS. Candidates should have been apprenticed in carriage and wagon building at one of the Works of British Railways or of a Contractor. They should have had experience in designing detail parts of carriages and wagons and must be skilled draftsmen. A knowledge of locomotive construction would be an advantage. Write to the CROWN AGENTS, 4, Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M3B/33954/RA.

GLOSSARY OF WOOD. A technical dictionary for all associated with timber and its uses. Ten thousand terms about timber—the common and the little known, the old and the new. Ten thousand definitions covering the entire field of timber and its uses—growth, marketing, utilisation. The common names of the species and uses of all wood-working equipment are all here explained simply, concisely and accurately. Illustrated by many clear line drawings. Price 21s. net. By post 21s. 9d. Tothill Press Limited, 33 Tothill Street, London, S.W.1.

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6 a.m. next morning. Emergency repairs were immediately effected and current was again available by 4 p.m. that day. As the repairs were temporary, with risk of further failure, Davy, Paxman & Co. Ltd. was asked to help. The message reached the management of the firm in Colchester at 4 p.m. on September 22. A 330-kVA diesel generating set was taken from the production line, and throughout the night maintenance and service staff worked on the set, with the result that it was handed over at Hythe Station, Colchester, before breakfast next morning. Arrangements were made to have a suitable wagon and crane available, and immediately after loading the train started its journey to March. The precaution was apparently fully justified as a further breakdown of the power line occurred and the set was put into full operation shortly after its arrival.

British Railways Heavy Coal Carrying.—Movement of coal by British Railways, 3,266,000 tons for the week ended 6 a.m. on September 28, including 388,890 tons for the weekend, are the highest for over four months. During the week ended September 19 over 223,000 tons of iron and steel and 336,000 tons of iron ore were carried.

Hyndland Branch Closed Temporarily.—The branch between Partick Hill and Hyndland was closed temporarily on September 29. Announcing this, British Railways, Scottish Region, stated that until the line was reopened for passenger services, the trains advertised to serve Hyndland start from and terminate at Partick Hill. The reason for the temporary closing has been an embankment fire which might necessitate considerable excavation before extinction.

Increased Operating Receipts for Trans-Zambesia Railway Co. Ltd.—Operating receipts for the year ended December 31, 1952, on the Trans-Zambesia Railway Co. Ltd., were £608,433, compared with the 1951 figure of £538,750 while expenditure, including provision for renewals, was

£451,523, as against £380,511 for the previous year. Net operating receipts at £156,910 were slightly lower than the previous year's figure. After taking into account interest on investments and adjustment in taxation provisions and providing for taxation on current profits, tax equalisation reserve, arbitration expenses and reserve for increased cost of replacement of fixed assets, the surplus available for the service of the loan capital amounted to £70,270, as compared with £70,542 for 1951.

Engineering Work between Bawtry and Scrooby.—Because of underline bridge reconstruction on the Eastern Region main line between Bawtry and Scrooby from 3.30 a.m. on October 4 (Sunday) to 3.30 a.m. next day and again between the same times on October 11 and 12, all trains except the 1.20 p.m. Peterborough to Doncaster will be diverted to run via Lincoln and Gainsborough Lea Road and will run approximately 20 mins. later than booked, beyond the diversion.

Cafeteria Car Services in Scottish Region.—Commencing September 28, cafeteria cars are running in the following trains in the Scottish Region:—9.5 a.m. Edinburgh Waverley to Glasgow Queen Street; 11 a.m. Queen Street to Waverley; 2.40 p.m. Waverley to Dundee Tay Bridge; 7.19 p.m. (5.18 p.m. from Aberdeen) Dundee Tay Bridge to Waverley; 9.15 a.m. Glasgow Buchanan Street to Dundee West; and 3 p.m. Dundee West (1.15 p.m. from Aberdeen, as from Perth) to Buchanan Street. This is the first occasion cafeteria cars have been introduced in the Scottish Region.

B.E.A. Deficit.—For the year ended March 31, 1953, British European Airways Corporation revenue was £13,128,080 compared with the previous year's figure of £10,817,687. Operating expenditure was £14,283,724; operating loss was £1,155,644 and net loss was £1,459,131. The two latter figures compare with £1,241,978 and £1,423,611 respectively for the previous year. There was a 19 per cent increase in traffic during the year and out of gross

revenue, less commissions, of £12,320,906, 83 per cent was earned from passengers at an average one-way fare of £7 7s. each.

London Transport Difficulties: Report to Ministry of Transport.—Grave concern is reported to have been expressed by the London Transport and the Railway Executives over the possible increase in peak-hour passenger traffic in the London area, should draft development plans now being submitted to the Ministry of Housing be accepted. A report endorsed by the British Transport Commission is stated to have been sent to the Ministry of Transport with a request that the problem be considered by all the Government departments concerned. Under the plans, which call for the decentralisation of London, the London Transport area would have a population of over 9,400,000 and it is estimated the population by 1971 would exceed 10,000,000. The report emphasises that unless there were a corresponding decentralisation of work, increased pressure on the transport systems at peak hours would follow; and it calls for greater acceleration in and expenditure on railway development in the London and Greater London areas.

Forthcoming Meetings

October 5 (Mon.).—Institute of Transport, at the Jarvis Hall, 66, Portland Place, London, W.1, at 5.45 p.m. Presidential Address by Mr. John Elliot.

October 7 (Wed.).—British Railways, Southern Region, Lecture & Debating Society, at the Chapter House, St. Thomas Street, London Bridge, S.E.1, at 5.45 p.m. Opening meeting of Session at which an illustrated lecture will be given by Mr. F. E. Campion, Regional Civil Engineer, entitled "Engineering Problems Created by Kent Coast Flooding." Mr. C. P. Hopkins, Chief Regional Officer, will be in the chair.

October 8 (Thu.).—Institute of Welding, North London Branch, at Manson House, Portland Place, London, W.1, at 7 for 7.30 p.m. Paper on "Automatic Welding," by Mr. R. L. Swan, Chief Engineer, Lincoln Electric Co. Ltd.

October 8 (Thu.).—Institute of Welding, South London Branch, at 2, Savoy Hill, London, W.C.2, at 6.30 p.m. Chairman's address, followed by Discussion on "Weld Preparations—What is the Aim." Opened by Messrs. E. Fuchs, F. C. Cocks and D. M. Kerr.

October 8 (Thu.).—University of Birmingham, Department of Extra-Mural Studies, at the University, Edmund Street, at 6 p.m. First of a series of twenty lectures on "Railway History," by Mr. C. R. Clinker.

October 8 (Thu.).—Institution of Electrical Engineers, at Savoy Place, London, W.C.2, at 5.30 p.m. (tea at 5 p.m.). Presidential Address by Mr. H. Bishop.

October 9 (Fri.) to October 15 (Thu.).—Fifth International Mechanical Engineering Congress to be held in Turin. Representing United Kingdom interests on Organising Committee of Congress, The British Engineers' Association, 32, Victoria Street, London, S.W.1.

October 10 (Sat.).—Permanent Way Institution, Newcastle Section. Visit to Doncaster Locomotive Building Works.

October 13 (Tue.).—South Wales & Mon-

mouthshire Railways & Docks Lecture & Debating Society, in the Angel Hotel, Westgate Street, Cardiff, at 6.30 p.m. Paper on "Some Southern Region Problems," by Mr. C. P. Hopkins, Chief Regional Officer, Southern Region.

October 13 (Tue.).—Institute of Transport, Metropolitan Section, Essex Group. At the Shire Hall, Chelmsford. Paper on "London, Tilbury & Southend Railway," by Mr. W. O. Reynolds.

October 14 (Wed.).—Permanent Way Institution, at the Railway Executive Headquarters, 222, Marylebone Road, N.W.1, at 6.30 p.m. Paper on "Our Visit to Belgian Railways" by Messrs. J. H. Bedwell and H. Bone.

October 14 (Wed.).—The Newcomen

Society, in the Lecture Theatre, Science Museum, Exhibition Road, South Kensington, S.W.7, at 5.30 p.m. Papers on "Report on Railways in England in 1826-27," by Messrs. Carl von Oeynhausen and Heinrich von Decheu, translated and reviewed by Mr. E. A. Forward, and "The First Watt Type Engine in Denmark," by Mr. H. H. Mansa.

October 15 (Thu.).—British Railways, Western Region, Lecture & Debating Society, in the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Paper on "History and Work of the British Transport Commission Police," by Mr. W. B. Richards, Chief Officer, Police, Railway Executive.

Railway Stock Market

There has been a larger business passing in stock markets, particularly in the gilt-edged and industrial sections. A fair amount of profit-taking developed after the sharp rise in values which followed the bank rate reduction, but subsequently buyers were again in evidence, though there has been a cautious attitude. The latter has reflected a general tendency in the City to await the big conversion operation expected in respect of the £577,000,000 of Serial Funding Bonds, and also the first of the big steel issues.

British Funds have been helped by the view that the bank rate is likely to be reduced further to 3 per cent before the end of the year. With regard to the steel issues there has been a little disappointment that Vickers have agreed terms for taking over their former interest in the English Steel Corporation. The negotiations are proving a lengthy affair, and the City is now suggesting that taking over English Steel by Vickers may not be finally agreed until the terms have been announced of the first of the public issues of steel shares, of which will provide a valuable basis on which to value other steel shares. The increased activity in industrial shares has followed the raising of the Imperial Chemical interim dividend from 5 per cent to 6 per cent, which came as a pleasant surprise and has led to the view that leading industrial companies are now prepared to modify the very conservative dividend policy they have followed in recent years.

Foreign rails displayed no outstanding features apart from renewed activity in United of Havana stocks in anticipation of early news of terms of the expected take-over settlement. At the time of going to press the 4 per cent "A" stock has risen to 93, and the 4 per cent "B" also changed hands around this level, while the 5 per cent second income stock was 38½ and the consolidated stock strengthened to 6.

Elsewhere, however, Antofagasta preference stock eased to 47, and the ordinary was 8½.

Canadian Pacifics became firmer at \$42½; the preference stock was £70 with the 4 per cent debentures at £86½. White Pass no par value shares changed hands arounds \$25; the convertible debentures were £90½.

Mexican Central "A" debentures eased to 85½. Manila Railway issues have been quiet with the "A" debentures 80 and the preference shares 8s. 3d. Elsewhere, San Paulo Units were 5s. 10½d. and Nitrate Rails shares 21s. 3d.

Chilian Northern first debentures changed hands at 28½. Costa Rica ordinary stock at 11 and the 6½ per cent first de-

bentures around 65½. Paraguay Central 6 per cent debentures marked 23, Taltal shares around 14s., and Guayaquil and Quito 5 per cent bonds 38, while Dorada ordinary stock transferred at 58.

A little speculative activity continued in old Russian railway bonds with business at 20s. in Russian South-Eastern.

The Barsi Light Railway Company is to redeem the whole of the 4 per cent and 5½ per cent debentures at par on January 1 next when the Government of India takes over. The purchase price cannot yet be determined, but meanwhile, the Government has agreed to make available £200,000.

There was rather more business passing in road transport shares, which remained firmly held. Ribble Motor marked 37s. 6d. West Riding were 37s., Southdown 32s. and Lancashire Transport 51s. 6d. Elsewhere, B.E.T. deferred units have been active around 31s. 3d.

Despite the more active conditions in markets, engineering and kindred shares were relatively quiet, sentiment in this section still reflecting a general tendency to await the first of the steel issues. If for example, steel shares were issued at a price showing a yield of around 7 per cent, there would probably be a good deal of switching from engineering into steel shares. It is generally assumed, however, that the first of the steel issues will probably relate to leading steel companies, either United Steel, Dorman Long or Stewarts and Lloyds and their ordinary shares would probably not be offered at prices giving yields of much more than 6½ per cent. Guest Keen at 52s. 1½d. have held an earlier rise, Vickers changed hands fairly actively around 50s. and Cammell Laird 5s. were 12s. 9d.

Elsewhere, John Brown at 35s. 10½d. have been firmer following the annual meeting where Lord Aberconway emphasised the widespread and varied interests of the group in the engineering and kindred fields. T. W. Wards have been firm at 76s. on market talk of a possible increase in the dividend. Tube Investments (63s.) were again favoured but in other directions. British Aluminium receded further to 35s. sentiment in regard to the latter still reflecting the directors' recent statement on current trading trends.

Beyer Peacock were 31s. 6d. with the new shares at a premium of 4s. 4½d. Charles Roberts 5s. shares were 16s. 6d. Birmingham Carriage 28s. 6d., Hurst Nelson 40s. 6d. xd and North British Locomotive 12s. 9d., Vulcan Foundry were 21s. 3d., Gloucester Wagon 10s. shares 15s. and Wagon Repairs 5s. shares 14s. 10½d.